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## PREFACE

The object of presenting such a manual as this is to acquaint the readers with the basic concepts and problems of dialectical materialism as a component part of Marxist-Leninist philosophy.

The authors of the present booklet take it for granted that the readers are studying Marxist-Leninist philosophy for the first time; for this reason they strove as far as possible to interpret the principles and categories of dialectical materialism in a popular form, with attractive and easily understood examples from science and social life.

The authors hope that this booklet will be of use for all those who desire to acquaint themselves with Marxist-Leninist philosophy.

*The authors*



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MARXIST PHILOSOPHY—DIALECTICAL MATERIALISM

## 1. What Is Philosophy?

Everyday experience teaches us that to understand correctly what takes place in the surrounding world we must be guided by a really scientific system of views on life, on the world as a whole, on our place in the Universe, and on phenomena and events. Man needs such a system of views on the world, such an understanding of it, not only in order to explain the causes of current events, but also to determine his place in the world and to influence actively these events, to become an active participant in the emancipation struggle which is raging in our time. *In other words, in order to understand the events that are happening around us one must be guided by a correct world outlook, which contains the sum-total of views on life, on the world as a whole.* Philosophy gives precisely such a knowledge. And this means that the builders of a new life also need, like the air

they breathe, philosophical knowledge besides other knowledge. He who studies philosophy cultivates in himself a searching mind, broadens his mental outlook, and acquires a conscious attitude to everything that takes place in the world surrounding him. It is not without reason that the term "philosophy" in ancient Greek language means love for wisdom, for knowledge.

However, one must bear in mind that not every philosophy provides a scientific understanding of the world, a scientific world outlook. Some philosophers, particularly those of the imperialist countries, distort the events happening in the world. This means that not every philosophy can be a guide to life, because not all world outlooks are correct. A scientific world outlook originates from a scientific philosophy. Experience shows that man arrives at a resolute conviction and confidently upholds the interests of his people, defends the freedom and independence of his country only by acquiring a scientific philosophical knowledge. And this conviction of the correctness of their views impels people to accomplish great deeds in the name of peace and happiness in the world.

How then can the great importance of philosophy be explained?

Whereas physics, astronomy, biology and other sciences study laws which govern only part of the phenomena of nature, so philosophy studies the most general laws, which govern all the phenomena of the world, and in accordance with which the whole world develops. *That is why philosophy*

*is the science of the most general laws of the development of nature, society and human thought.* It would be incorrect, however, to deduce from this that philosophy can dispense with other sciences, or that the latter, in turn, can dispense with philosophy. Only when philosophy rests, in its conclusions, upon the achievements of other sciences can it be an advanced, progressive world outlook. Marxist-Leninist philosophy is precisely such a philosophy. It is closely connected with other sciences; it rests upon the latest scientific achievements, and, in turn, it arms contemporary science with the most advanced philosophical world outlook and method of cognition, and helps it to achieve further knowledge indispensable to man.

Philosophy provides man with a definite system of views of the world, and herein lies its tremendous power. But we have already said that different people can have different views of the world, different world outlooks. With some such views may be scientific and progressive; with others they may be unscientific and even reactionary.

For instance, those who fight for the freedom and happiness of the people understand such philosophical problems as the problem of the meaning of life, of happiness, of freedom, etc., differently from those who oppress the people. Those who fight against colonialism and imperialism understand freedom and happiness differently from the imperialist colonisers.



Evidently the difference in the understanding of philosophical questions depends, first of all, upon the position in life, in society of this or that person. History shows that in a society where there are different classes and social groups fighting among themselves there also exist different philosophical views. In such a society, therefore, there cannot be one philosophy, one world outlook for the oppressed and the oppressors. Philosophy always stands for the interests of those it serves. This means that philosophy cannot be neutral when there rages the struggle of the peoples for liberation against social and colonial oppression.

These facts show that philosophy is always *partisan*. In other words, it defends class or party interests. That is why every historical epoch has always had parties fighting one another over philosophical issues. Such parties are the forces of *materialism* and *idealism*.

It must be taken into account, first of all, that the scientific meaning of these concepts is very often distorted. The reactionary classes try with all their might to create the opinion among the people that the materialist is one who is concerned only with his personal advantage, obsessed with material interests. They depict the idealist to be one who selflessly serves a certain cause, idea, or ideal. This is a distorted, philistine understanding of materialism and idealism, which has nothing in common with the difference which actually exists between the two main philosophical camps. The division between them lies on a completely

different plane. This is not difficult to understand, if one ponders over the following.

Among all the problems studied by philosophy, as one of the ancient sciences, there exists a *basic problem* which determines the character of philosophy, i.e., it provides the possibility of clarifying what kind of philosophy it is.

What do we regard then as the basic problem of philosophy?

In the world we encounter a great number of things and phenomena. Some of them, such as stones, trees, thunder, lightning, water, animals, plants, and many others exist independently of man's consciousness. We know of them, thanks to the fact that they affect our sense organs: we can see and feel them, we can measure and weigh them. But there exist other types of phenomena, such as thought, sensation, will, desire. These we can neither see nor hear; and they cannot be measured or weighed. They exist only in man's consciousness. This means that there exist in the world two groups of phenomena: one group does not depend upon our consciousness, for these phenomena exist objectively, i.e., by themselves. They are *material*; the other group of phenomena exists only in our consciousness. These phenomena are *ideal, spiritual*. Hence arises the permanent question: What is the relation between material and spiritual (ideal) phenomena? Which is primary: the material or the ideal? In other words, which is to be regarded as primary: the material world, nature, or consciousness? This is only one aspect



of the basic problem of any philosophy. The other aspect is: can, or cannot, man know the world and achieve a *correct* understanding of it? Philosophers answer this basic problem of philosophy differently. The answers which the philosophers give to this problem split them into two great camps. Those philosophers who recognise the primacy of the material world, nature, and regard consciousness as secondary, derived from nature, constitute the philosophical *camp of materialism*. And those who assert the primacy of consciousness, and regard nature as secondary, derived from consciousness, constitute the philosophical *camp of idealism*. Herein lies the basic difference. These two philosophical camps, two main trends in philosophy, have already existed, and struggled against each other, for over two and a half thousand years. Proceeding from the achievements of science, the materialists have convincingly proved that the material things and phenomena surrounding us exist by themselves, i.e., outside of our consciousness. For instance, the earth, stones, lightning, trees, etc., exist independently of man and his consciousness. Moreover, science has proved that the universe has existed earlier than the advent of man on earth with his consciousness. Disregarding the data of science, the idealists assert that the world surrounding us, that all material things and phenomena are the products of consciousness. They maintain that initially there existed thought, conception, idea; and then thoughts, ideas produced things, objects.

In the history of philosophy two kinds of idealistic doctrines are known: *objective* and *subjective* idealism. An object is that which exists outside of man, independently of his consciousness. Some idealists proceed from the contention that the idea, which produces the world, exists objectively. For this reason they are called *objective idealists*. The ancient Greek philosopher Plato, for instance, the German nineteenth-century philosopher Hegel, as well as the exponents of neo-Thomism—the official philosophical doctrine of the Catholic Church—are among these idealists.

Further. The subjective is that which is inherent in a person, in man, i.e., in a subject. Some philosophers, like the Englishman Berkeley (eighteenth century), held that only man, the subject, and his consciousness really exist. He asserted that things exist only when man directly perceives them—feels, sees, hears, touches them. If man does not perceive them, then there are no things. In his understanding the world exists only in consciousness, in the sensations of the subject. "To exist means to be perceived." Things—"these are combinations of sensations," thus Berkeley and his followers declared. This is equivalent to the statement that the subject, man, creates the world every time all over again. This form of idealism is called *subjective idealism*.

Idealism—either objective or subjective—is disproved by man's practice. Everyday life proves the truth of the materialist views of the world.

To the materialists things and phenomena



surrounding us exist in reality, i.e., independently of us, of our consciousness. And such argument is usually inherent in any sound man, for life, everyday practice constantly teaches us this. The materialists reason out things as they are. Initially there exists the pineapple; we see it, we feel it. With its objective properties, independent of man, the pineapple calls forth certain sensations of sourness, sweetness, greenness, and so on. This is precisely the elementary materialist view of the world by which people are guided in their practical life. The materialist philosophers take this view of the world, scientifically substantiate it and work out therefrom a conscious materialist outlook. As distinguished, therefore, from elementary materialism, philosophical materialism is conscious materialism, scientifically grounded, aiding people to understand correctly natural phenomena and social events.

Hence, the above-mentioned shows the great significance of the basic problem of philosophy. It is not by chance that it is that central axis around which revolves the struggle between the materialists and the idealists from ancient times to our day. This ideological battle between the materialists and the idealists reflects the class struggle, the struggle in society between the progressive and the reactionary forces. In this struggle, as a rule, materialism always defended the interests of the progressive forces, while idealism, with a few exceptions, championed the interests of the reactionary forces.

The study and the understanding of the world also depends upon what *method of cognition* is used by this or that philosopher. The philosophical method used in studying all the phenomena of nature and social life is of great significance to philosophy and science. The word "method" itself, translated from the Greek, means path, direction. If we have chosen the correct way, i.e., if we are guided by the correct philosophical method, in the course of studying nature, then we can succeed in discovering the mysteries of nature. If the way, i.e., the method chosen is not the correct one, then we risk groping in the dark and we may not arrive at the desired goal—a correct knowledge of nature.

Every science has its method of investigating phenomena. For instance, contemporary biology employs the methods of observation, of experiment, etc. However, separate individual sciences apply the method of investigating only to separate phenomena in each of their fields of knowledge. The task of philosophy is to show the way, the method of investigation, not only of separate phenomena of nature and society, but of all the phenomena of the world. This means that the task of philosophy is to provide a general philosophical method of cognition which can serve as a guide to all sciences, in addition to their respective methods.

What methods of apprehending the world have been worked out by philosophy throughout its history? There exist two philosophical methods,



two ways of apprehending all phenomena. One of them requires considering all things and phenomena in their continuous development and change. This is the *dialectical* method. The word "dialectics" in ancient times had a different connotation from that which it has today. By dialectics, the ancient Greek thinkers understood the means of establishing the truth in arguments, testing the truth by discussion. Now *dialectics is understood as a philosophical method of cognising reality, according to which everything in the world develops and changes*. As the ancient Greek philosopher Heraclitus said, everything flows, everything changes.

The other philosophical method demands that we examine all things and phenomena as fossilised, immutable, immobile. This method is called *metaphysical*. It appears that dialectics and metaphysics are two different, conflicting methods of understanding the world. Which then of these two philosophical methods is correct, is scientific? It goes without saying that that method is correct which requires us to consider everything as being in a state of change, in process of development, i.e., the dialectical method. This corresponds to reality itself; this is confirmed by scientific and human practice. You see, life does not stay, it changes, it develops. For instance, in Africa, not so long ago, British and French colonisers ruled, but later many African states achieved independence, threw off the fetters of colonialism and are now fighting for the future happiness of their peoples.

This is real development; this is progress in the life of the peoples. The phenomena of nature also develop. This means that dialectics correctly points out the way to study all phenomena in nature and in society.

One must bear in mind, however, that dialectics is genuine and scientific only when it is organically united with materialism. This unity of dialectics and materialism is realised in Marxist philosophy—dialectical materialism.

## 2. Genesis of Dialectical Materialism

Marxist philosophy—dialectical materialism—was created by the great teachers of the working class, Karl Marx (1818-1883) and Friedrich Engels (1820-1895), and creatively developed in the new conditions by Vladimir Ilyich Lenin (1870-1924), leader of all the toiling masses. Human history knows of no persons who have exerted such tremendous influence upon the development of spiritual culture and human destiny as that rendered by Karl Marx, Friedrich Engels and Lenin—titans of human thought and the revolutionary cause. Training their eyes on the future, they foresaw what fate lies ahead for the people, they showed the path and means of achieving a free and happy life on earth.

The philosophical doctrine of Marx and Engels started to take shape in the middle of the last century under the influence of the early workers'



movement for economic and political emancipation.

During the thirties and forties of the nineteenth century the proletariat came forward for the first time. In England, there unfolded the mass struggle of the workers for political rights, known in history as the Chartist movement; in France the workers in Lyons revolted; in Germany the Silesian weavers became restive. These early class battles between labour and capital paved the way for the emancipation struggle of the working class. Thus the doctrine of Marx and Engels appeared on the basis of the emancipation struggle of the proletariat against exploitation and oppression. It became a politically conscious expression of the essential interests of the working class, the programme of their fight for socialism. This teaching has shown the proletariat of all countries the only correct path of emancipation from capitalist enslavement.

The doctrine of Marx and Engels was not born apart from the high road of the development of world culture. It appeared as the lawful successor to all the best that was created by progressive mankind. Philosophy had existed and developed before Marx and Engels. Its great achievement lies in the fact that it has provided people with the materialist understanding of nature and also with the teaching on development (dialectics). This achievement in philosophical thought was fully realised in German philosophy at the end of the eighteenth and beginning of the nineteenth

century. The famous German idealist philosopher Hegel (1770-1831) and the well-known German materialist philosopher Ludwig Feuerbach (1804-1872) were the brilliant predecessors of Marx and Engels in the realm of philosophy.

The great value of Hegel's philosophical teaching lay in that it contained the idea of development-dialectics. The materialist understanding of nature at the time was most fully embodied in Feuerbach's philosophical teaching. With a new force, Ludwig Feuerbach posed the question regarding the indispensability of the struggle against idealism and religion.

Since the end of the eighteenth century natural science developed impetuously under the influence of the needs of capitalist production. Thus in physics, for example, studies of such natural phenomena as heat, magnetism and electricity were successfully pushed forward. In chemistry studies were made of the properties of various chemical elements and the component parts of chemical substances. Great successes were achieved in geology—the science which studies the origin and structure of the earth.

All these successes in natural science paved the way and led to the three great discoveries.

First, the discovery of the cell. It was established that all animal and plant organs are made of various kinds of cells. This discovery established the structural unity of living nature.

Secondly, one of the fundamental laws of nature—the law of the conservation and transformation



of energy\*—was discovered. According to this law, energy, as well as its repository—matter—can neither be created nor destroyed. It is merely converted and transformed from one form into another under certain conditions. For example, mechanical energy is transformed into heat by shock and friction. And the heat of locomotive boilers and power-generating turbines is transformed into mechanical and electrical energy. This discovery proved the interconnection of different forms of energy.

Thirdly, there appeared the doctrine of the English naturalist Charles Darwin (1809-1882) concerning the origin of plant and animal species. This doctrine is called Darwinism. Darwin dealt a strong blow to the metaphysical, anti-dialectical views of living nature. He demonstrated that all plants, animals and human beings appeared as a result of development, lasting for millions of years.

The significance of these great discoveries in natural science lies first of all in that they broke the narrow limits of the metaphysical methods of thinking of the scientists of the time. They allowed men to view nature in a new way. In the light of these discoveries nature ceased to be something fossilised and immutable. It was clearly established that all nature, from its tiniest particles to the biggest cosmic bodies, from the grain of sand

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\* *Energy*—one of the main properties of matter—capacity to produce work. This is the measurement of the motion of matter.

to the sun and stars, from the simplest living cells to man, is in constant movement and change.

Historical science, in turn, demonstrated that social life also does not stay in one place, but changes. Classes exist in society and the class struggle between them proceeds. The bourgeois revolutions in England and France took place on this basis, putting an end to the old feudal system. In a word, the whole process of development of science concerning nature and society showed that the metaphysical view of the world had outlived its usefulness and there arose the necessity of replacing it with a new, dialectical outlook.

Marx and Engels assimilated all that was progressive and valuable created in science up to their time. They did not, however, simply assimilate the achievements of human reason but critically analysed the gains of advanced human thought in conformity to the interests and aims of the proletariat and all the labouring masses. Great revolutionaries that they were, they performed an unprecedented scientific feat, they made a revolution in science—in philosophy, in political economy, in the study of socialism and other spheres of human knowledge; and they created a new revolutionary science—Marxism. This was a new revolutionary world outlook.

Marx pointed out that previous philosophers only explained the world in one way or another. But the task consists in changing it. Of course the imperialist bourgeoisie was not interested in changing the world. It came to power, and it



intended to preserve for ever the capitalist system. The proletariat and all the labouring masses, on the other hand, were vitally interested in changing the old world and in building a classless socialist society. This aim of theirs does not contradict the progressive development of society, but it fully conforms to the laws of history. Precisely the proletariat, as the most advanced and revolutionary class in society, as the leader of the labouring and oppressed masses, is equal to this great and noble mission—to be the builder of the new socialist society. The old philosophy was not equal to this aim. It was detached from the life of the people and from the interests of the toiling masses. For this great task, for the realisation of which the proletariat led the struggle, a new revolutionary philosophy was necessary, which could help not only in correctly explaining the world, but would also serve as a reliable spiritual weapon in changing the world in a revolutionary way. The philosophy of Marxism—dialectical materialism—was and is precisely this spiritual weapon of the labouring masses.

Marx and Engels understood perfectly that in the course of creating a new revolutionary world outlook, it was impossible to throw completely overboard the previous philosophy. This would have been simply unwise. It needed to be critically re-worked, preserving the valuable achievements of progressive human thought—the materialist understanding of nature and the teaching of development (dialectics). But this could only be done

by completely overcoming the shortcomings and limitations of the previous philosophy, which had become an obstacle to the progress of human thought.

Of what then do the shortcomings and limitations of the previous philosophy consist?

Old materialism was metaphysical. It regarded nature as being in a state of stagnation and immutability. This was the case, for example, in the seventeenth and eighteenth centuries, when the Sun, planets and their satellites were considered to be always immutable. It was the same view that had rooted itself in the understanding of living nature.

Previous materialists, including Feuerbach, left out of account the tremendous role of the practical activities of men. They only saw the influence of nature upon man, but they failed to notice the counter-influence of man upon nature. Whereas people did not only contemplate the outside world; they actively exerted influence upon it and changed it in practice. For instance, people are constantly improving production, inventing new labour implements, lathes, machines, etc. They also change the social order. The old is replaced by the new.

By what then is this basic shortcoming of all previous materialism to be explained? It is to be explained by the fact that the whole of the pre-Marxian materialist philosophy was inconsistent and incomplete materialism. Its representatives were materialists only in explaining natural

phenomena, but they remained idealists in their approach to explaining social phenomena. In explaining natural phenomena they correctly considered nature to be primary, and consciousness secondary, derivative. When, however, it was necessary to explain the phenomena of social life, they abandoned the ground of materialism; they did not see the material, the natural causes and sources of social development and became, consequently, idealists. They considered, for example, the opinions of people, so-called "strong personalities", their desire, their will, to be the motive force of social progress. They acknowledged only the ideal factor in social development, and not the objective, the material. In this regard Feuerbach is a typical example. He considered nature to be primary, and consciousness secondary. From this standpoint he pointedly criticised idealism and religion. As to explaining the phenomena of social life: religion, morality, the attitude of men to each other, etc., Ludwig Feuerbach remained on the positions of idealism. For instance, in order to explain correctly such a social phenomenon as morality by those real conditions under which people live, he proceeded from certain eternal and immutable moral ideas inherent in men, independent of the material conditions of life. This is an idealist view of social life, as it implies the presence of ideas, moral principles, independent of being.

Consequently, for the creation of dialectical materialism it was necessary to criticise and over-

come the shortcomings of old materialism. In preserving the materialist foundations of previous philosophies, i.e., the materialist understanding of nature, Marx and Engels did not stop there, but went further. They saw that their task was to apply materialism to social life and provide man with a scientific materialist understanding of history, thus completing the structure of materialist philosophy. In order to fulfil this task it was necessary to elaborate revolutionary dialectics, i.e., *a most complete and all-sided doctrine of development, to unite materialism and dialectics into an integrally whole doctrine—dialectical materialism, and apply it to the history of society.*

How, then, did matters stand with dialectics in previous philosophies?

As a rule, materialism and dialectics in philosophy developed in isolation from each other. Materialism, as has been shown, remained metaphysical, undialectical, while dialectics developed in idealistic philosophical teachings, particularly in the teachings of the German idealist philosopher Hegel. On the strength of this, serious shortcomings were retained in dialectics, and these shortcomings had to be overcome.

In its most developed form, dialectics, as has already been said, was introduced to philosophy by Hegel's teachings. But the shortcomings of his dialectics consisted in the fact that it was completely subordinated to idealism. For this reason, dialectics, in Hegel's philosophy, were applied solely to the development of the idea and



to consciousness. For Hegel, only the Idea, the Spirit, develops and passes from one state into another; as to nature, which Hegel considered to be one of the stages in the development of the Idea, it does not develop in time, i.e., it does not have its own history. It was not only necessary to overcome the radical shortcomings of Hegelian dialectics. It was also essential to find and save all that was of value and progressive in it. Feuerbach smashed Hegel's system and simply cast it away. As the saying goes, he threw out the baby with the bath water.

It took the genius of Marx to find and save, hidden somewhere in Hegel's idealist dialectical teachings, the rational kernel of his dialectics. This rational kernel consisted in the assertion that everything in the world is in a state of change and development, and that inner contradictions are the source of this development. But, in order to separate this progressive doctrine of development from the idealist husk it was necessary to alter Hegel's dialectics radically on a materialist pattern and give it a contemporary scientific form. And this could only be done on the basis of the achievements of revolutionary practice and science.

The application by Marx and Engels of the dialectical method, in the study of nature and social life, permitted them to create a philosophical doctrine wherein *materialism and dialectics are inseparably united into an integral whole*. Thus *dialectical materialism* was created as a new revolutionary world outlook, the only authentic

one, one fully corresponding to the interests and aims of the liberation struggle of the labouring masses. In our time dialectical materialism is a dependable ideological weapon which helps the people build a new life. What is dialectical materialism? What does it deal with? We shall find the answer to these questions in the next chapter.

## Chapter II

### MATTER AND ITS FORMS OF MOTION

#### What Is Matter?

The doctrine of matter is the cornerstone of materialism. Life, everyday practice, convinces us that the world exists objectively, independently of man, of his consciousness, sensation, desire. This is proved also by science, which has demonstrated that the Universe has existed long before the advent of man and all living organisms; which means that it has been existing independently of them. The Earth, according to scientific data, has been in existence for 5,000 million years, but men appeared on it only about a million years ago. The objectivity of the world, i.e., its existence outside and independent of consciousness, implies that it is material.

We are surrounded by an infinite quantity of objects and phenomena. Stones, trees, grains of sand, the sun, animals, seas and deserts, stars and planets, and many, many other things make up our

surroundings. All of these we call by one word "matter". Such words, in this case "matter", are called concepts.

Some concepts embrace a wider range of subjects or phenomena, others—narrower. Thus, the concept "thing" is wider than the concept "pen" or "table".

Does the widest concept of all exist? Yes, it does. If the concept embraces all subjects and phenomena, starting from a grain of sand and up to the human brain, then such a concept would be the widest.

"Matter" is that concept. It comes out that "matter" is as much a concept as "thing", but it is very broad—the broadest of all concepts. It is distinguished from more common concepts by its expression of essential and general characteristics not only of a given group of things, but of *all* things and phenomena in the world—of everything that surrounds us. These broadest concepts are also called philosophical categories.

What then are these general and essential properties inherent in all things? All of them, first of all, are material, existing objectively, i.e., outside of man's consciousness and independently of him.

They possess, further, one important property. For example, when we wash with warm water we feel the warmth. When we look at the trees in a forest we see the green colour of leaves. It comes out that things, which exist independently of us, have the property of affecting our sense-organs



and of producing corresponding sensations. Thus we call matter that which surrounds us, everything that exists objectively—all the outside material world, which affects our sense-organs and produces sensations. In his *Materialism and Empirio-Criticism*, V. I. Lenin defines the concept of matter in the following way: "Matter is a philosophical category denoting the objective reality which is given to man by his sensations. . . matter is that which, acting upon our sense-organs, produces sensation; matter is the objective reality given to us in sensation, and so forth."

It can be confidently said that there is not a single philosophical concept which had been subjected to such fierce attacks by the idealists as the concept of matter. The idealists, up to the present time, are doing everything possible, and impossible, in order to discredit it. They resort to all sorts of tricks, falsify contemporary science, and try to prove that there is no matter altogether, that it has "disappeared", that it "does not exist". But this is ridiculous, since that would mean that the world had "disappeared". Of course the idealists try as hard as they can to make their arguments sound convincing. Since they "base" their arguments upon some discoveries of atomic physics, so let us take them up in greater detail.

In order to understand our exposition, one must bear in mind that the word "matter" was not understood by previous scientists and philosophers as a philosophical category, but just as any one

form of matter, atoms, for example, which make up whole bodies. Science in the seventeenth and eighteenth centuries considered atoms to be indivisible, indestructible, everlasting "bricks" of the Universe, from which the world is made.

At the end of the nineteenth century it was firmly established that the opinion upholding the indissolubility of the atom should be discarded: the atom can be split. We are not going to deal at length with the scientific discoveries of atomic physics. Here it is important for us to underline another point: on their basis the idealists deduced that materialism has suffered a setback. They reasoned somewhat like this: the indivisible atom was previously considered the basis of matter, but it turns out that it divides and breaks into parts. So the foundation allegedly collapses, upon which rests the very edifice of materialism and its inner core—matter. But this argument itself has no logical basis whatever.

What, however, happened in science at the end of the nineteenth and the beginning of the twentieth century? New knowledge was gained. Before it was not known that the atom is divisible, that electrons, protons, atomic nuclei exist. Now this is known. All of these data show that our ideas about the *natural-scientific image of the world*, about the structure of matter, have changed. Many discoveries have been made in science regarding the structure of matter. If at the dawn of these discoveries two or three particles of matter

were known, now more than 30 such particles have come to light. But what is most important is that science has confirmed that all of these particles exist independently of our consciousness. They are as much material as the atom itself.

Scientific discoveries convincingly prove that it is impossible to mix up metaphysical materialism with dialectical materialism. Matter, for metaphysical materialism, is immutable and indestructible atoms. Dialectical materialism proceeds from the fact that matter can neither be reduced even to "the last brick", i.e., atom, nor in general to any "eternal" property. Matter does not possess one property but an infinite number of properties: the objects of the natural world, and their properties, are diverse.

It is therefore impossible to mix up the scientific teaching on the structure of matter with the philosophical conception of matter as an objective reality. Scientific discoveries decide the problem of the structure of matter: is it made of atoms, of electrons, or does it have still other particles? Philosophy also decides another problem: does the world, and hence these particles, exist objectively, outside of man's consciousness? Consequently, whatever new particles are discovered by science (and it constantly discovers new ones), these discoveries could not possibly refute materialism, as these very particles are material, and they, too, exist objectively, independently of man and mankind.

However our ideas of the image of the world change they cannot prove that "matter has disappeared". Scientific discoveries have provided new confirmation of matter as an objective reality. It is only our idea of the composition, structure and scientific image of the world that undergoes a change.

But precisely the principle of the eternity of matter often raises questions. During his lifetime man witnesses that every thing has its beginning and its end. It has at one time or another come into being. And here the question is raised: who then created matter? Science answers: it has always existed, eternally.

And the confirmation of this follows directly from the law of the conservation of matter.

Let us begin with an ordinary example. If a piece of wood is thrown into the fire, only some ashes of it will remain. The wood seems to have disappeared, burnt out. But it is not difficult to notice that after the wood was burnt it did not disappear, without leaving a trace, but it was converted into other substances different from the burnt piece of wood.

The great Russian scientist M. V. Lomonosov (1711-1765) observed similar facts. He arrived at the conclusion that there is not a single body or element in nature that can disappear without leaving any trace, and nothing can come into being from nothing. Lomonosov formulated this idea in the well-known law of the conservation of substance, which is also called the law of the



conservation of matter. From this it follows that in nature nothing comes into being from nothing, and it never happens that something disappears into nothingness without leaving a trace; it is only converted into other forms of matter.

It follows from this most important law of nature that the religious myth that God created the world from nothing is absolutely groundless. Since matter exists, it means that it never came into being; it has always existed and will always exist.

#### Indissolubility of Matter and Motion

If an object is lying at a place, it does not move of itself. For example, a stone does not change its position, until someone moves it. But if one could penetrate into it he will notice that still there is motion in it. Here atoms, molecules, electrons, which, as it is known, exist in all bodies, are constantly moving, and the process of deterioration under the influence of moisture, sun and wind goes on. A house, for example, does not stand motionless, it moves together with the earth around the sun. We sit still. We do not move anywhere, but within us blood is circulating. Complex changes are taking place in our bodies. New cells are being born and old ones are dying away. And this is also motion.

Consider heat. It turns out that it is the result of the motion of a great number of molecules.

When water gets heated its temperature rises due to the motion of its molecules. But this is not simple mechanical motion. It is something new, more complicated. Electric current is a movement of electrons. And chemical reaction is a form of motion, a combination of ions—a process which is still more complicated. Living organisms are also in a state of constant motion. In human society changes are constantly taking place. Social systems are changing. People themselves are changing, as well as their moral make-up, and their understanding of passing events, etc.

What conclusion then follows from what has been said? It is that in the Universe there exist different forms of motion. First, there is the motion of the particles of matter or bodies, i.e., the mechanical form of motion. Secondly, heat, electric process or physical form of motion. Thirdly, chemical reactions, combination or separation of ions. This is a chemical form of motion. Fourthly, changes taking place in living organisms—the biological form of motion. Fifthly, social form of motion, i.e., changes which take place in social life.

Engels pointed out that motion embraces all changes and processes happening in the Universe, beginning from simple motion up to thought. It comes out that motion is any change which takes place in objects or phenomena, i.e., in the world. This is a change of matter in general.

Could matter be in such a state where no change of any kind takes place in it? Certainly not. Even

in that remote age when neither men nor animals yet inhabited the earth, nor were there living cells, even then there were changes that took place in matter. Really, the bodies consist of atoms and molecules, which all the time are in motion. There never existed, does not exist, and can never exist, a single body that is so congealed as to be absolutely motionless. Further, if atoms, molecules, electrons existed in the past, then chemical reactions must have been present also. Thus the chemical form of motion in matter was also in existence.

From this it follows that *there was never a situation where matter existed without motion*. That is why they say that *motion is a form of existence, a form of being of matter*. Motion is an integral property of matter. There is no matter without motion; it exists only in motion.

Does it imply then that dialectical materialism denies rest? No. Rest in nature exists; but that is relative. Here we mean that there is no phenomenon wherein everything would be at rest, where there would be no motion at all.

If a body is at rest, then it is at rest relative to something else. For example, when a train is moving we are resting in relation to the train, but we are in the same state of motion as the train itself. The dialectical conception of rest is essentially different from that of metaphysics. The latter understands rest as the absence of any motion. Dialectical materialism is against any such conception.

In nature it is motion, development and change and not rest that are of decisive significance, although it does exist as relative rest. The denial of motion as a property of matter leads to the acceptance of God. Some philosophers of the capitalist countries, for example, declare that development is possible only when there is God—the “mover” of nature. But we have already seen that matter, nature, does not need any “mover” at all. Motion is intrinsically inherent in it as its essential, inalienable property. It is senseless to raise the question as to the origin of that which exists eternally.

#### Time and Space— Forms of Existence of Matter

All objects possess extent, definite size and volume, i.e., three dimensions—breadth, length and height, and occupy a definite position. Besides, they are arranged in a certain relationship to each other: farther or nearer, higher or lower, right or left. This signifies that they all exist in space and cannot exist in any other way. But we already know that all objects in the Universe are composed of what we call matter. It follows from this that matter can exist only in space. That is why space is defined as a form of the existence of matter.

Further. As we have already noticed, all phenomena in nature are in a state of constant change, motion and development. Besides, all



phenomena in the world alternate in a definite sequence: night follows day, socialism follows capitalism. One event occurs earlier, another later. They all possess definite duration. This change and development, alternation and succession of events, and their duration cannot proceed otherwise than in time.

Thus, everything that comes about in the world happens in time. Hence, time is also a form of the existence of matter. V. I. Lenin, in the work we have already referred to, *Materialism and Empirio-Criticism*, wrote: "There is nothing in the world but matter in motion, and matter in motion cannot move otherwise than in space and time."

Space is a form of the existence of matter, determining the location of a material body, and its dimensions, its volume. As to time, it determines another aspect of the existence and development of matter: the sequence and duration of those changes, which take place in the material world. It is understood from this that the property of space and the property of time are different, are not one and the same. What then are the properties inherent in space and in time?

Space has three dimensions. This means that length, breadth and height give a full characterisation of space. These three dimensions constitute the most important characteristic of space.

Each of us knows that the change of a phenomenon in time proceeds only in one direction: from the past to the present and to the future,

There is no reverse flow of time. People have been able to create "mechanical time", the hands of which move "in reverse", only in stories and fantastic novels. It is impossible to repeat any stage of an action in the reverse direction in time. Consequently, the most important quality of time is its irreversibility.

If an object occupies a certain place in space, this is either today, yesterday, or, in a word, "at some time". The two questions where? and when? are inseparably connected. They define the time of the event and its place in space.

Thus, time and space are inseparably linked up. They cannot be separated from each other. Space without time does not exist, just as time without space does not exist either. And since matter exists in space and time, then space and time cannot be separated either from each other or from matter.

The opinion of the great natural scientist Newton (1642-1727) that space and time existed separately from matter and independently of material things dominated science up to the beginning of the twentieth century. Space is a kind of large box or endless room without walls, ceiling and floor, where one can put in or pull out things. The surrounding world is, as though, "placed" inside this "box" or that "room". From this Newton deduced the conclusion that space is an absolute category, is independent of matter. Time was similarly regarded as something absolute, not connected with and independent

of matter. This was the view of metaphysical materialism.

The great physicist of the twentieth century Albert Einstein (1879-1955), who created the theory of relativity, approached the problem of space and time in a completely different way. He confirmed scientifically the idea expressed by the creators of dialectical materialism, Marx and Engels, that space and time are connected with each other as they are also with matter, upon whose properties they depend.

It may appear that time passes at the same rate on the Earth as on a rocket moving at a tremendous speed. But it turns out that it is definitely not so. If a rocket moves at a speed approaching the speed of light, then time passes on it relatively slower than that on the Earth. Imagine yourself to be travelling in such a rocket. We fly, let us suppose, for three years. But when we land again on the Earth we shall be astonished to find that more than 360 years shall have passed already on the Earth. This is hard to conceive, but it is so. This means that the Earth and the rocket have their respective and different time. Time is relative to and depends upon the speed of motion. The faster a given body moves in space the slower time passes on it.

However, space itself is also relative. Let us assume that a train rushes by a station platform at a speed close to that of light (the speed of light is equivalent to 300,000 kilometres per second).

The passengers on the train will find that the platform is shortened, while the people standing on that platform will find the contrary, that it is the rushing train that is shortened. Space, in this case, is also relative.

Contemporary idealists attempt to distort this scientific discovery. They remark: since space and time are relative, then they do not exist objectively, but only in man's consciousness. But this is not true. New discoveries have not disproved the materialist conceptions of space and time. What has been disproved is only the previous metaphysical conceptions of space and time. As the physicists say, every system of co-ordinates has its own time, and this time is relative. But it exists objectively. And space, too, exists objectively.

But if time and space are objective and do not depend upon man, then would not man be helpless before the inexorable flow of time?

It is not within the power of man to stop time, but he is not powerless before the flow of time. On the contrary, he has everything necessary in order to take possession of it and to master it. The more we know how to use time the better it serves us.

The socialist countries, for instance, have a fast tempo of development of production. It allows them to win time in economic competition with developed capitalist countries.

Another example. The people of the Republic of Mali are carrying out a five-year plan of devel-



opment of the national economy. They strive to use these five years to consolidate the independence of the country and to raise the standard of living of the people. This means, also, that the people and the government of Mali are striving to gain time.

#### **The Infiniteness and Unity of the World**

Space is infinite, and time is eternal. That is why the world stretches infinitely in all directions—upward, downward, to the right, to the left. It did not have a beginning and will not have an end in time.

Science fully confirms the materialist teaching on the infiniteness of the world and of space. Our planet—the Earth—is only a tiny particle in the boundless ocean of the Universe. The unit of measurement for the Universe is not the kilometre, but the so-called light-year, i.e., the distance covered by a beam of light in a year when moving at the speed of light, 300,000 kilometres per second. At present astronomy is studying stars which are thousands of millions or more light-years' distance from us. This means that even the rocket, which moves at a speed of 50,000 km per hour, would arrive there only after many thousands of milliards of years! The distance is hardly imaginable. And science claims that this is not the limit.

Look at the sky at night—it is sown with stars. This whole system of stars, to which the Sun also

belongs, is called the Galaxy. It consists of about 150,000 million stars. There are many millions of such galaxies known to science. Scientists have been able to study all this with the help of the most powerful modern observation instruments—the largest optical and radio telescopes. But this is still not the "end of the world".

Consequently, the Universe is limitless, endless and boundless. That is why the attempts of the idealists to prove that the world had its beginning and that it will have an end are groundless.

Science has convincingly proved that the non-material, "the other world", does not exist and cannot exist. In fact, if there is nothing else but matter, then there can exist only one, the material Universe. That is why Marxist philosophy teaches that the Universe is uniform. It is not to be understood that there exists only that world in which we live. The great Italian scientist Giordano Bruno (1548-1600) already proved that there are a great number of worlds. But all of them are material. In this sense all of them make up the single, material Universe. Besides, the unity of the world signifies also that all objects, phenomena, processes are mutually related, that they do not present a heap of isolated objects, but a united whole.

By what is the unity of the Universe proven? Engels answers, by the long and laborious development of philosophy and natural science. In olden days, when men did not have a scientific understanding of the Sun, planets and stars, they

considered the "heavenly world" (stars, Sun, Moon) to be completely distinct from the "earthly world". That is how the idea of the two worlds came into being. But gradually, with the development of science, the veil of mystery began to fall, and it appeared that "heaven" is as much material in its foundation as the world in which we live.

The first blow to the idealistic conception of the Universe was dealt by the Polish scientist, Nikolaus Copernicus (1473-1543). He expressed the idea that the Earth is not the centre of the Universe, but a common planet in our solar system. It was thus established that the Earth should not be contrasted to "heaven". There is nothing supernatural in "heaven".

In the eighteenth century the great scientist Newton proved that the laws of mechanics, which govern the revolution of our Earth around the Sun, also control the motion of the Moon around the Earth, and other planets around the Sun.

Heavenly bodies consist of the same elements as the Earth. The complete unity, i.e., community, of the main elements, which are present on the Earth and on other bodies of the Universe is fully established. This can be seen in the results of the analysis of those bodies which fall to us from the depths of space, like, for example, meteorites. Their main constituent is iron, i.e., the element which is most widely distributed on Earth. This fully testifies that there is not any "non-

material substance" in these "representatives of heaven".

There is no evidence of a single phenomenon in the Universe which is not the result of matter in motion. It embraces everything, it spreads its activity everywhere, and there is nothing and there can be no more than that. There is only one material Universe. The unity of the Universe consists in its materiality.

Now let us examine the relation between the material world and consciousness.



## MATTER AND CONSCIOUSNESS

### Consciousness—the Property of Highly Organised Matter

People, even during unrecorded aeons of past time, pondered over why man ceases to think, to move, and to speak, after death.

People have tried for many hundreds of years to unravel the interrelations between the body and what is called the spirit, or rather, the *consciousness* of man. But it was found that it was incredibly difficult to solve this problem. How is one to investigate that which is not seen, not heard, and without any colour? It is a pity, but that is exactly how matters stand with our consciousness. No one knows about my thought, if I do not speak about it. What, then, is thought, thinking? For hundreds of years the idealists and the clergy have taken, and are taking advantage of these problems.

Religion teaches that the source of life and thought is the soul, the spirit. Without the soul the body cannot exist, it is dead.

The soul, it is alleged, can well dispense with the body. At birth it settles in the body and it abandons the body after death. The recognition of the "life beyond" up till now has constituted the foundation upon which most religions operate.

But is this true? Let us see.

Consciousness is thought, sensation, conceptions, will. These are, first of all, characteristics of man. There is no sensation without somebody feeling it. If there is nobody to desire, i.e., a human being, then there is no desire. There is no will without somebody manifesting that will.

It is true that there are some rudiments of consciousness inherent in animals. For example, the sensation of colour, smell, some share of quickness of wit.

From the above-mentioned it follows that nature existed not only before man, but in general before living creatures, consequently, independently of consciousness. Nature is primary. And consciousness could not have existed earlier than nature. Consciousness is secondary.

It has been scientifically established that fainting—loss of consciousness—happens as a result of lack of blood in the brain, or due to some acute disease of the cardio-vascular system, serious trauma, or loss of blood. Thus consciousness depends upon material processes taking place in the body, brain, and nerves. The destruction of the body leads to the destruction of consciousness.

Here is another example. Everybody knows that when one is tired and not feeling well the mind is

not sufficiently clear. And, conversely, when one has a good rest, does physical exercise, or takes a shower, the mind clears up.

Thus we arrive again at the conclusion that there is not, and cannot be, consciousness without matter. But does all matter think? In order to answer this question it is enough to take a look at the surrounding world. No, not all matter thinks. A stone, for example, and in general inanimate nature, does not think. In many living organisms there are no signs of consciousness. When did consciousness come into being?

It has been proved by contemporary natural science that living nature was generated from inanimate matter. This is an important conclusion. The idealists asserted that living nature has nothing in common with inanimate nature. They argued that animate and inanimate objects are radically distinct from one another. Animate, as distinguished from inanimate beings have faculties of locomotion, reproduction, and growth. The difference is, indeed, tremendous. But at the time the idealists could not explain what is common between them. Thus there arose the opinion that there is a special "vital power" in living organisms, which gives them characteristics totally distinct from those of inanimate nature. Is this true?

The living organism is, of course, distinct from inanimate matter. But at the same time they are inseparably connected. For instance, the living organism consists of such elements as carbon,

hydrogen, oxygen, iron, sulphur, phosphorus, etc. There is not a single element in the living organism which is not present in dead, inanimate nature. All this shows their obvious close relation with each other. On the strength of these facts it has been scientifically proved that living nature originated from the non-living nature.

However, the beginning of life on Earth, the beginning of the first cells, did not yet signify the emergence of consciousness. Together with life, only a possibility arises for the first rudiments of consciousness to appear.

Consciousness is connected with the activities of the large cerebral hemispheres, themselves the product of many centuries of evolution in the course of which the nervous system was developed. The behaviour of animals developed, and became complicated, until the human brain, together with human consciousness, appeared.

It is precisely with the large cerebral hemispheres that the higher manifestations of nervous activity are connected. It is easy to be convinced of this, if one compares the development of the nervous system with the corresponding development of behaviour in animals gradually becoming more complex. In fish, for example, where the cerebral cortex is absent, we find only the simplest behaviour. It is much more complicated in birds, insofar as they possess already some elements of the cortex. With dogs it is even more complicated, as they possess a



much more developed cerebral cortex. And with the human-like apes any arbitrary movement is already found to be dependent upon the cortex of the large hemispheres. But in spite of all this one cannot speak of thinking animals in the true sense of the word. Thinking is a human property, connected with the development of the human brain in the process of the evolution of superior forms of organic matter. *Consciousness is the product not of any matter, but of highly organised matter, is a product of the activity of the brain. Consciousness is a function of the brain.* It cannot exist without the brain.

That consciousness depends specifically on the brain is confirmed by the fact that man can often be revived if he has just recently died. After the lapse of more than five minutes the brain undergoes a process leading to its final destruction. The functioning of the heart could still be restored, but the functioning of the brain can no longer be restored. In it a so-called irreversible process has taken place. Consciousness is irretrievably lost precisely because the brain has permanently ceased to function.

What then is consciousness?

Take any assertion, any statement, for example: "I see this book", "This house is high". It is quite clear that it is not the book that is in our mind, but the thought of it, not the house itself, but the thought of the house. In other words, there are images of objects and phenomena in the mind. Every thought consists of notions. For instance, in

the sentence "The leaves are green", the idea is expressed in the words, in the notions "leaves" and "are green". Where does this concept come from? From life, from reality. Reality exists objectively, and on its basis we form our understanding. To begin with there is the book, and then my concept of it. It follows that concepts are secondary. First of all there is the reality, and then its reflection, the thought of it in the brain. For this reason Lenin called thought a copy, a reflection of reality. In it reality is reproduced, portrayed, "photographed".

One must bear in mind that the opponents of materialism, in order to discredit it, assert that it considers matter and consciousness to be identical, regards the psychical to be also material. They "forget" to specify, however, what materialism in particular is spoken of. Dialectical materialism, for example, has nothing to do with the assertion that the psyche is matter. Moreover, dialectical materialism exposes the so-called vulgar materialists precisely because they identify thought with matter. They also recognise the secondary character of consciousness, but they cannot correctly explain its real meaning. Vulgar materialists maintain that the brain produces thought approximately like the liver secretes the bile. They are called vulgar materialists", because they understand thought in a crude, vulgar and simplified way.

Lenin sharply criticised vulgar materialists for confusing consciousness with matter. He showed that consciousness is not material. It is a copy, an image of reality. However, the brain reflects, "photographs" reality not like the ordinary photo-camera. Reality is transformed in the human mind in the sense that it contains not the things themselves, not the objects themselves, but their images.

Such is man's consciousness—the property of highly organised matter, the brain, to reflect material reality.

### Thought and Language

We are often amazed at the behaviour of the monkey. For example, a man has placed a banana before the monkey. It is difficult for it to reach the banana, because there is fire in front of it. But this monkey was "taught" that it is possible to fetch water from the small barrel standing nearby, put out the fire and reach out for the banana. Further, the monkey is placed in a new situation: a raft is on the river where a banana is placed in front of a fire, and the small barrel of water is comparatively far away. The problem is the same: to put out the fire, and take the banana. The monkey can get water near-by—there is plenty of it around the raft. But, no, it strives with difficulty to reach for the barrel in order to get precisely "that" water.

This experiment shows that the monkey has no notion of "water". Its general properties are not

known to it. Its mode of thought is directly connected with the surrounding objects. Moreover, it is helpless without such direct connection. This means that it is able to "think" only of the objects before it. But if they are not, it is unable to "think".

With man, however, the mode of thought is qualitatively different. Objects become familiar to him and he studies their properties in the process of production, labour, and scientific activity. He is aware that the water in the small barrel, in the river, in the well, in the sea, etc., possesses a common property—the power to put out fire, for example. He evolves the concept "water". It is not water in a barrel, in the sea, in the river, but "water in general". This is a general concept. Here man abstracts from the concrete objects those properties that are general.

When we speak of the concept "tree", "tree in general", we have in mind the general properties which characterise any tree, and not only that one which grows under our window. Here we leave the concrete trees for an abstraction—we generalise. That is why a concept is called an abstract notion. This is the characteristic feature of human thinking—its abstract character—which is beyond the reach of animals.

What enables us to abstract, i.e., to distinguish the main features of an object from the object itself? This possibility is given to us by words, by speech. The word "tree" indicates to us that



trees in general are referred to, and not just a given concrete tree. In other words, an abstract thought cannot be expressed in any way other than by words.

From childhood man's consciousness is formed on the basis of words or language, through the medium of which we express our thoughts. In this process there gradually appears that which is characteristic only of man: thought becomes intimately related with speech. It is impossible to separate human consciousness, thinking, from human speech. The organic, inseparable unity of language and thought is established.

Engels stressed that articulate speech promoted the further development of the human brain. Under what influences did this come about?

The following example will help us to find the correct answer. There are some well-known incidents in history of "rearing up" children in wolves' dens. Such a case was published in India in 1956. A she-wolf carried away a baby girl who was hardly three years old. A few years after she was found the following account was given. The child was walking on all fours, she imitated the cry of animals but, of course, she could not speak. There is nothing surprising here. The child imitated the animals in every way. But there is one interesting detail in this incident. However much the child was taught to speak she could not learn to do so. Human consciousness was not restored. She could not adapt herself to the new conditions and died. This example goes to show

that upbringing in childhood plays a tremendous role in developing human personality.

Here a problem arises. The child was born with a normal human brain. Its brain was evidently as old as its age. Why was its thinking so hopelessly stunted? It appears that it is not enough for man to have a sound mind in order to possess human consciousness. He must, moreover, live in society, in a collective. *Outside the collective there is no human thinking.* It arises as a result of man's life in society. Thinking, on the one hand, can come about only when man reflects nature and he, on the other hand, participates in some definite relations with other people in labour, in productive activity. *Labour has made man and human society.* It was precisely in labour, in productive activity that man's brain, his consciousness developed. It is for this reason that Marx observed that consciousness right from the beginning has always been a social product and remains so as long as humanity exists. Consciousness is the product of man's life in society. It is a social phenomenon.

This means that consciousness cannot exist outside of society for exactly the same reason that speech and language cannot. Articulate speech and language arise as a necessary means for the exchange of thought in social intercourse between people.

Only in words does thought become real. While it is yet in man's mind it is as if dead, inaccessible to other people. That is why Marx pointed out that language is the direct reality of thought. This

means that thinking does not exist otherwise than in language, in a material "casing". Even when we do not express our thoughts aloud, but only, as the saying goes, "think to ourselves", we also wrap them in words, in a language casing. Thanks to language, thoughts are not only given form, but are also made communicable to other people.

### Thinking and Machines

Of course, many have heard of "clever" machines. And probably some have seen such machines. They accomplish complicated work of translating from one language into another, directing airplanes, operating trains, and even playing chess. They accomplish certain logical operations, peculiar to the human brain. They "take into consideration" when a train should apply the brakes, they "remember" some operations, etc. Here it is as if a human mind clothed in metal operates. These are cybernetic machines (cybernetics—the science of self-directing mechanisms).

But is it possible to create a machine which could completely replace the human brain? No, it is impossible. It is true that a machine can faultlessly accomplish that programme which man has fitted to it. It can even discover new facts, which are not known to the creator of the machine. However, a machine will always be only a help to human reason. Without man it will be "dead metal".

Why then is the human brain immeasurably

superior to any machines? Because the human brain is a product of social life and human thinking also bears a social character. There is not one "electronic brain" that can "reconstruct" the inner spiritual world of man, his active character, flights of fantasy, dreams, ability to constrain the will, his complicated world of the arts.

The machine can perform only those functions of man which bear an automatic, mechanical character. Whatever functions cybernetic mechanisms accomplish for man these will always be means employed by man, by society, in solving problems of production, cognition, and others. A machine cannot think, it can only help man to think. The merit of cybernetic technique lies precisely in the fact that it greatly facilitates man's mental activity.



knowledge of the most profound and the most general relationships. A law reflects not only the most general, but also the indispensable, connection. What it expresses is revealed, arises from necessity and inevitability.

In practical life the word "law" is used in another sense. For example, this or that government adopts a new Constitution—the fundamental law of the country. This is a legal law, it has juridical force. But when we speak of a philosophical law we have in mind not the laws created by man, but the ones which exist objectively, of themselves, in nature and society.

Just as objects and phenomena exist objectively, so the relations between them, i.e., the laws by which they develop, exist objectively. Hence, *the most important feature of a law is that it has an objective character*. This means that the regularities of the development of nature and society do not depend upon the will and consciousness of men, and this is proved by all human experience. Thus, natural laws had been in operation long before the appearance of human society. Man appeared on earth comparatively recently. But the laws, under which our planet moves in its orbit, have been in existence as long as the planet itself. This also applies to the other natural laws.

The laws of social development are also of an objective character. People can neither arbitrarily create nor destroy social laws.

The idealist philosophers hold a different opinion. They deny the objective character of laws.

The German philosopher Immanuel Kant (1724-1808) maintained that nature itself knows of no laws at all. Here everything is in a state of chaos. And only human reason imparts order and regularity to nature. Without man there would have been no laws. Contemporary bourgeois philosophers echo such views. But is it right to think so?

Primitive man was not aware of the presence of laws in the world. And he did not bother to find them out. Consequently, no laws were "inborn" in him. It was only later, when men began to find out in practical activities the existence of regular relations between phenomena, that they started to search for laws in reality and began to discover them. This goes to show that the idealist understanding of laws is contrary to practice, because the latter proves that the laws of nature and society have an objective character.

Hence, a law expresses the universal, necessary, objective and relatively constant connection between phenomena and objects existing in the world. The recognition of the objective character of the laws of nature and society is not contrary to the fact that man can cognise these laws and utilise them for his benefit. The whole history of science and technique bears brilliant witness to the fact that the laws discovered by men are employed in their practical activity. Dialectical materialism recognises the active role of consciousness in man's life. The existence of dreams and healthy fantasies confirms that

consciousness does not passively perceive the world. In this case consciousness seems to be ahead of the reality, actively influencing the latter. It is well known, for example, that the daring fantasy of the writer Jules Verne anticipated many scientific discoveries. In our days the scientific theory of Marxism-Leninism has become a mighty force which assists hundreds of millions of people on earth to rebuild the old world on new principles.

Thus, if laws establish the essential relations which characterise all phenomena of nature, society, and thinking, they are called universal, i.e., laws of dialectics. What are these laws?

## 2. The Law of the Transition from Quantitative to Qualitative Change

In order to construct an aeroplane that can fly with a speed faster than sound, or a rocket, people need materials which are not available in nature. Where can they be found? Where may one obtain, for example, an alloy which will be more durable than steel but more transparent than glass? Chemistry has furnished the key to the solution of this problem.

Scientists have learned to create polymers, i.e., substances, the molecules of which consist of a tremendous number of atoms. Chemical scientists are thus able to create new qualities, new properties of substance.

What is quality and what is quantity?

Every thing has its own specific characteristics by which we recognise it. Looking around, we see that any thing—an ink-well, tree, animal or any other object possesses signs, aspects, or marks by which we distinguish it from other things.

Why do we say that this is a pencil? Because in front of me is a thin stick of graphite set in wood, which I can use for writing, sketching and drawing. These are what I have determined to be the chief properties of the thing itself. Thus I have revealed the features which make it what it is—its properties, its qualities.

Thus, *quality is the inner (i.e., related with the object itself), sum-total of an object's essential features, thanks to which the object acquires its identity and is distinguished from other objects.*

By what do we mainly define quality? Here is an example. A girl bought a bottle of milk at the store, and on the way she accidentally dropped it on the sidewalk. But the bottle did not break, it only bounced like a ball. We got interested in this incident, and we found out that it has something to do with the quality of a new material called "unbreakable glass"; we came to the conclusion: this material is of a new quality.

Thanks to the discovery of the *properties*, we have discovered new quality. That is how we always act. If we study the quality of a metal, for example, this means that we ascertain its properties: its colour, tendency to oxidise or not, its density, its atomic weight, hardness or softness,



etc. Having studied these, we learn its inner essential nature, i.e., its quality.

Hence, a *property is a feature of a thing, a faculty for characterising the thing, a peculiarity. The sum-total of these inner peculiarities of the thing is its quality.* This implies that quality reveals itself through properties.

Usually an object possesses not one, but many properties. That is why it is impossible to mix up quality with a property. Quality is the inner unity, the sum-total of all its properties. This means that there is not one isolated property which expresses the quality of a thing, but that all properties taken together as a whole do so. A metal may lose its colour, i.e., one of its properties, but it remains a metal. When it loses all its properties, or at least its main properties, then it also loses its quality.

Objects and phenomena are not only characterised by their quality, but also by their *quantity*. This is not difficult to understand, if we recall that in connection with the problems of the quality of objects (what they possess in themselves) we are always confronted with the problem of their quantity (how many are they? what is their size? their volume? etc.).

The quantitative characteristics of objects and phenomena are highly varied. That is why quantity is expressed in various ways. If we are interested, for example, in the quantity of livestock: camels, sheep, goats, zebus, then we characterise them in the form of numbers, for example, 10, 100, 1,000,

etc. If we have to know how much rice or ground-nuts were harvested this year compared with last year, we can show this by percentages, by tons, etc.

Hence, *quantity is the definiteness of the objects and phenomena, characterised by number, size, weight, volume, etc.*

When the quality of an object changes, the object itself changes. But does a change in quantity ever lead to a change in the object itself? Let us see.

There are many who know how a dam is built to control the flow of a river. The builders throw into the river huge boulders. When the first stones are thrown there is no dam yet. It will not appear even after the second or the third attempt. But eventually such a quantity of stones have been thrown into the river that they decisively influence the flow of the water. A few more—and the river is dammed. From separate stones a dam has been erected.

What, indeed, has happened here? As long as the quantitative changes had not reached the decisive limits they seemed not to influence the formation of a new quality (in this case, the dam). But as soon as they reached the crucial limit, the change turns out to affect the quality of the thing or phenomenon.

What then is a measure?

It is enough to look at the world, in order to see that things and phenomena invariably exist more or less with definite measurements. Some stones, for example, may be big, others small, but

all stones have definite sizes. You have never seen a stone a kilometre high. That would rather be a rock. Thus all things in the world have inherent measures: the given quality has a corresponding more or less definite quantity and not any range of quantity. People are either tall, medium, or small. Their weight also varies. But all people have a definite height, weight, etc. You have never seen a human being 5 metres high, with a weight of, say, a ton. Such a quantity (a ton) is incompatible with the given quality (human being). It is the same with other objects. All of them possess definite qualities to which correspond not just any, not just an accidental, but more or less definite, quantities. Things always have their measures.

It is seen from what has been said that *measure is the conformity, the interconnecting unity of the quantitative and qualitative aspects of an object*. Every object has always a quality, to which corresponds a definite quantity.

An important conclusion is drawn from this: if quantitative changes are taking place in an object they cannot influence the quality, so long as they do not reach the limits of the measure. Within these limits the objects seem to behave indifferently to quantitative changes, they seem not to notice them. But as soon as the measure is upset, quantitative changes begin to be reflected in the qualitative state of the object. Quantity passes into quality.

Quantitative changes accumulate gradually; they do not, at first, affect the qualitative state

of the object. Then a point is reached when the accumulated quantitative changes effect changes in the quality. It was precisely to this that the previous examples applied. When the chemists learned to make polymers and to produce new substances, new qualities, they based themselves precisely on the dialectic law of the transition of quantity into quality.

It should be borne in mind that it is not only quantitative changes that pass into qualitative changes, but vice versa as well. Qualitative changes also bring about quantitative changes.

Let us suppose people evolve a new variety of ground-nuts. This is a new quality. The new variety of ground-nuts gives more oil. Consequently, here a new qualitative change passes into a quantitative change. Quantity passes into quality and vice versa.

Hence, the essence of the law of quantitative changes passing into qualitative changes consists in the fact that *small, imperceptible initial quantitative changes accumulate, and finally reach a stage at which they pass into radical qualitative changes, as a result of which the old quality disappears and a new quality appears, and this in turn brings about new quantitative changes*.

But how does the transition from quantitative changes to qualitative changes take place?

Everyone, of course, has seen water boil. Initially, the water only warms up. Later the temperature goes up to, let us say, 50, 60, 70 degrees. But the water still remains water. It is



true that by this time change has already begun. But the change is not so great as to cause the water to lose its *quality*. Thus it proceeds up to 99 degrees. But when the temperature of the water rises one degree more, it immediately "boils", it is converted into steam. The qualitative state of the water changes.

In this example we can clearly see how quantity changes into quality. In the beginning the process goes slowly, gradually: the quantitative, preparatory changes take place. But when they have accumulated sufficiently, abrupt, rapid qualitative changes take place. This transition is called a *leap*. This means that at a certain point the slow, quantitative development is interrupted and the moment comes when the transition to a new quality takes place, a transition which is no longer slow and gradual. The transition to a new quality is accomplished by a leap. That is why Lenin described the *leap as the decisive turning point from the old quality to the new one, as a critical point of development*.

It is already clear for us from what has been said that the process of development proceeds in two stages, it is accomplished in two forms: slow, insignificant quantitative changes and rapid, radical qualitative changes. The slow quantitative changes always proceed within the limits of the old measures, the old quality. Here there is no radical change as yet in the objects or phenomena. In this sense they can be called *evolutionary* changes. *Evolution is a smooth, gradual, slow*

*development, passing into new quality, without any abrupt leaps.*

*Development which is connected with a radical break of the old, with a qualitative upheaval of social relations, scientific ideas, of technique, etc., is called a revolutionary development.*

However, it should be borne in mind that the concept "evolution" is often distorted by the metaphysicians.

Some metaphysicians maintain that development proceeds only by evolutionary means, without any leaps. They maintain that only quantitative changes occur in the world. There is nothing qualitatively new in nature. This view is so-called vulgar evolution, because it comprehends evolution crudely, vulgarly, distortedly. The followers of this view deny the necessity of revolutionary struggle against imperialism and colonialism.

Another metaphysical viewpoint characteristic of anarchists and "Left" adventurists in general is no less harmful. It denies the evolutionary process, the process of quantitative changes and acknowledges only "leaps", "revolutionary explosions", without the preparatory phase of development, without gradual accumulation of forces.

Dialectical materialism, in contradistinction to such one-sided metaphysical views, proceeds from the fact that there exists a profound connection between the evolutionary and revolutionary aspects of the process of development. This connection makes one process unthinkable without the other: no qualitative, revolutionary changes are possible

without quantitative, evolutionary changes; and without qualitative, revolutionary changes, there can be no new measures, no new stages and, therefore, no development.

Now let us examine the problem of what kinds of leaps there are and upon what they depend.

The fact that different kinds of leaps exist is easy to see by examples. The change of the ape into a man is, of course, a leap in the development of the animal world. But this did not take a day, but a long historical period of tens of thousands of years. The boiling of water mentioned above is another form of leap. They are distinguished from each other in that one form of leap calls for radical changes over a comparatively long period of time, while the other occurs almost suddenly. Hence, the great role of the time factor in defining the form of leap.

Further, it is not difficult to understand that different forms of transition from one quality into another, i.e., different forms of leaps, depend upon the nature of the phenomenon which develops and upon the conditions under which it develops. This is particularly evident in the examples from social life. In capitalist society leaps are produced as a result of decisive struggles, insofar as this society is divided into hostile classes. In socialist society where there are no hostile classes, leaps or sharp turning points are produced as a result of gradual dying away of the elements of the old society (or "quality") and the growth of the elements of the new society (or

"quality"). Radical changes here take place due to the extent of the accumulation of the various new qualities.

In the developing countries that have recently liberated themselves from colonial oppression the radical changes in the life of the people such as the appearance of co-operation among the peasants, the creation of industry, proceed gradually: the structure of the national economy is changing, the old branches of production give way to the new ones, and so on.

From what has been said a conclusion can be drawn, that the law of the transition of the quantitative changes to qualitative changes discloses the internal mechanism of the formation of new qualities, i.e., the basis of development itself. But what is its motive force, its source? Another law of dialectics supplies the answer to this—the law of the unity and struggle of opposites.

### 3. The Law of the Unity and Struggle of Opposites

The concept of contradictions has long been studied by scientists. The metaphysicians, for example, proceeding from the belief that there should not be contradictions in our statements, affirmed that in nature there also should be no contradictions, conflicting properties, aspects, and so on. The ancient Greek philosopher Zeno, who lived in the fifth century B.C., already tried to



prove that wherever contradictions are found there is something "untrue", "impossible", "senseless" about them.

What positions then do some contemporary bourgeois philosophers take? The reactionary American philosopher Sidney Hook, for example, maintains that judgement, affirmation, proof can be contradictory, but not by any means things and phenomena.

But science and practice prove that in things, in nature itself, there are contradictions, contradictory aspects. Take a look at human and animal organisms. Two contradictory processes take place in them simultaneously: some of their cells are growing and others are dying within them at the same time. And even if only one of these processes ceases then the organism dies. At every step such an example is to be found. These contradictions are nature itself. From them there is no escape.

Why then do they exist? In order to understand this we must begin with what we call *opposites* and study how and when *contradictions* arise between them.

Let us draw attention to our usual daily practice. In what sense do we use the word "opposite"? The North Pole is the opposite of the South Pole of the Earth, the right and left sides of the road are opposites, etc. When we compare things and see that their properties are not the same, that we can contrast them to each other, in such a case we say that these subjects or phenomena are in

opposition to each other: for example, kind and wicked persons. Why do we set similar phenomena, events, in opposition to each other? Because one of them *excludes* the other. It is as if the good were set apart, detached, excluded from the bad, the north from the south, the left from the right. As you see, *opposites are phenomena or their aspects which exclude each other.*

However, if the bad were always situated so far from the good that there were nothing in common between them, then there would not be any friction, hostile collision, enmity, discord between these opposites. In other words there would have been no contradiction between them. In fact, when do contradictions arise between people of different character and outlook? Contradictions arise only when people meet or in some other way collide with each other. It is precisely in this way that opposites interact.

Thus, if one studies it seriously, it is not difficult to understand that opposites exist in life and are inseparable from each other. They can be grasped only in their interconnections. This is the case with plus and minus in mathematics, action and opposite reaction in mechanics which coexist and interact: the boat pushes us with the same force that we push it. There is no action without an opposite reaction.

Between opposites which are connected with each other there always arise specific relations. That is why "friction", "collisions", "discords" occur between them. Wherever there are opposites

in collision, wherever some sort of relationship binds them, there always arise contradictions. Hence, *contradiction is the relation between opposites. Opposites emerge as the two sides of contradiction.*

If things and phenomena had not changed, if once and for ever they had remained one and the same, then there would have been no opposites, no mutually exclusive aspects. But we already know that they are in constant movement, change, and development. That is why there are always different aspects. Something grows old and dies out, something new is born and develops. In other words, there always occur opposite phenomena, or forces, hence there are always contradictions as the world develops.

In what relation to each other do we find them?

It can be seen from what has already been said that opposites are found in mutual relation. This relation is so close, so inseparable, that without it they cannot exist. Such a relation we call *the unity of opposites*. The metaphysicians deny this unity. They regard every opposite as existing by itself. In reality this is not so. Take just the case of the work in the plant, in the factory, in the co-operative.

Every enterprise has its expenditures, i.e., expenses, costs in cash or in kind. But it also has the so-called income, i.e., receipts in cash or in kind. Can an enterprise operate where there is only expenditure and no income at all? Of course, it cannot. But it also cannot operate without spend-

ing money for equipment, raw materials, labour and other purposes.

Here is another example. As is known, animal or human life consists of two contradictory processes: some cells come into being, others are destroyed, and die away. But can you imagine a man saying that in order to prolong life it is necessary to suspend the process of dying, the destruction of cells, and have only the process of renewal, the creation of new cells. Then cells would only be renewed and never die out. A man who reasons that way commits a crude mistake: the fact is that life itself consists of two contradictory processes and to separate one from the other is simply impossible.

To eliminate one opposite is to eliminate the other, and this means eliminating life itself. The process of life is a unity and at the same time a contradictory process.

Contemporary metaphysicians reason something like this: there are "good" and "bad" aspects in capitalist society. In order for capitalism to recover from all its "evils", they suggest that the "good" aspects should be promoted, and the "bad" ones eliminated. Then, they claim, a society of "universal welfare" will be built. This reasoning is similar to the desire to have only the process of the birth and growth of new cells in the human organism and to stop the dying away of old cells. However, just as this cannot be done in the organism so, too, it is impossible to *achieve* this in bourgeois society.

The opposites here do not exist side by side with each other, but in unity, they intertwine and together constitute what is called bourgeois society. That is why it is impossible to "take out" one of its aspects, leaving the other. And this is understandable: in order to eliminate the "bad aspects" of capitalism, i.e., its evils, it is necessary to eliminate capitalism itself. There is no other way.

Thus, *the unity of opposites consists in the fact that they are inseparably interconnected and together they make up a united contradictory process.* Opposites are interdependent, i.e., one exists only because the other exists.

The collision of contradictory tendencies is called a "struggle", and insofar as every thing, every process consists of such contradictory processes, it is easy to see that collision or struggle goes on between them. What calls it forth?

The struggle between opposites is called forth by the fact that they are at one and the same time connected with each other, i.e., they are in a state of unity, and reject or exclude each other. As a result friction, collision, struggle are inevitable. Consequently, wherever there are opposites, in a state of unity, there is struggle between them. By the struggle of opposites it should be understood that the "aim" of each of them is to obtain the prevalent, dominant significance in the given phenomenon.

We see that the unity and struggle of opposites really exist. Which then plays the decisive role in development?

*The main role is played not by the unity, but by the struggle of opposites, which does not cease even for a moment; it expresses the real meaning of the interrelation of the opposites. Inasmuch as they exclude each other, they are in a state of struggle. That is why if the unity of opposites is relative, temporary, transient, then their struggle, as Lenin teaches, is as absolute as development, or motion, is.* This means that *the struggle of opposites is the source of the motion, of development.* Let us consider a few examples in order to understand this.

New quality, as we have seen, comes as a result of the gradual accumulation of quantitative changes. But what causes this process? When water, for example, is heated, then the speed of movement of the molecules increases. The force of attraction of the molecules, thanks to which water remains in the liquid state, gradually weakens. At the boiling temperature it weakens so much that it cannot retain them and the water begins to be converted rapidly into steam. All this happens as a result of the struggle of two opposite forces: on the one hand, the force of attraction of the molecules; on the other, the force of repulsion between them, and the molecules begin to separate. The struggle between these forces lasts until the contradiction between them is resolved: the leap puts an end to the unity of opposites in question.



There arises a new qualitative state with new contradictions: the water is converted into steam. The result is that the resolution of the contradiction leads to a new quality, development, motion, and change.

This is also what takes place in society. When the contradictions, corroding the capitalist system, bring about a socialist revolution, this signifies that the hour of their resolution has come. As a result of the struggle of opposites, the resolving of the contradictions, the society rises to a higher level—the old, bourgeois society is replaced by a new, socialist one. As we see, the struggle of opposites and their resolution act as the source of social development.

Thus, the essence of the law of the unity and struggle of opposites consists in that *internal contradictory aspects inherent in all things and processes are in a state of inseparable unity and at the same time in an incessant struggle*. It is precisely this struggle of opposites that is the internal source, the motive force of development. Lenin called this law *the essence, the nucleus of dialectics*.

Now let us try to elucidate the peculiarities of the contradictions in social life.

The contradiction between the capitalist and the worker is one thing; contradictions between the workers who have common class interests are another.

In the first case, it is an irreconcilable class contradiction; in the second case, it is a contra-

diction between comrades in work. Hence the methods of solution of these contradictions are different. The first type of contradiction is called *antagonistic*, and the second, *non-antagonistic*. Antagonistic contradictions take place where the struggle of irreconcilable interests occurs. Irreconcilable contradictions in an antagonistic society become conflicts between hostile social forces, between classes. They lead to conflicts and collisions between landowners and peasants, between the bourgeoisie and the proletariat, between the colonial peoples and the imperialists. This is shown by the example of capitalist society.

Bourgeois society has outlived its years of usefulness. It has become an obstacle in the path of social progress. In our time production can be successfully carried out only on the principles of planning. This is, however, impossible to do in the conditions of capitalism, because there predominate private property, competitive struggle, economic rivalry of one capitalist with another, of one firm with the other. This leads to anarchy in production, i.e., to the lack of plan, the absence of order in economic life. As a result of this periodic crises of overproduction take place in capitalist society. Unemployment grows, masses of the people are deprived of purchasing power. This leads to the curtailment of production and gives rise to even greater unemployment.

With this contradiction are connected all the remaining contradictions which rend contempo-

rary capitalist society and lead to its inevitable collapse.

A profound antagonism divides the imperialist states from those countries who have recently attained independence and freedom. The peoples of Africa, Asia, the Middle East, and Latin America are no longer reconciled to imperialist enslavement, and have taken up the struggle for their own emancipation. The antagonism between labour and capital, the contradictions between the people and the monopolies, the decline of the colonial system, the contradictions between the young national states and the old colonial powers, and, above all, the impetuous growth of the world socialist system erode and destroy imperialism, lead to its weakening and collapse. Such is capitalist reality, with its internal antagonistic contradictions that are leading to the downfall of capitalism, the last system of class exploitation.

How are antagonistic contradictions resolved?

Antagonistic contradictions are irreconcilable contradictions of hostile social forces, interests, aims, views, which lead to conflicts and collisions. They are resolved by embittered struggles, by social revolutions. The antagonism cannot be resolved within the framework of the old social relations. In order to resolve it it is necessary to do away with these relations in a revolutionary way. But does this signify that the forms and methods of resolving antagonistic contradictions are in every case one and the same? No. They depend upon the conditions, under which antago-

nistic contradictions are resolved. Hence in differing historical conditions different methods of resolving the antagonistic contradictions are observed. For example, some countries won national independence through a protracted armed struggle against colonialists, while others achieved theirs through a persistent and protracted mass struggle without directly resorting to arms.

Non-antagonistic contradictions are distinguished from the antagonistic ones by the fact that they are contradictions between social forces which at the same time have common vital interests. Such, for example, are contradictions between the working class and the peasantry, between the backward and the advanced social elements who are building a new society on new principles.

In the case of non-antagonistic contradictions, which are characteristic of socialist society, the aggravation and deepening of the contradictions, and their development into hostile opposites, are absent. Conversely, if classes have fundamental interests in common, a tendency towards the softening, or smoothing of the contradictions is observed. This is the reason why methods of resolving these contradictions differ from the methods of resolving antagonistic contradictions, in the same way as these contradictions themselves differ from each other. They are not liquidated by social revolutions and political upheavals, but by education, criticism and self-criticism, and by other methods, proceeding from the concrete conditions. Contradictions in socialist society are revealed in

time and are resolved in their own distinct way. For this reason they never develop into irreconcilable collisions of hostile forces and interests, for in the conditions of socialist society there is unity of interests, and the strengthening of the ideological and political unity of the whole society.

In developing countries, that emancipated themselves from colonialism, all social contradictions can be successfully resolved only by means of their non-capitalist development. The absence of antagonistic contradictions in socialist countries does not signify that there are absolutely no contradictions there.

However the non-antagonistic contradictions operating under socialism can be successfully resolved within the framework of the existing social order.

But how does development take place? In what direction does it proceed? The law of the negation of the negation supplies the answer to these questions.

#### **4. The Law of the Negation of the Negation**

All of us know that in the world around us we constantly meet natural phenomena such as ageing, destruction, and death. Any natural phenomenon has its own origin, i.e., it comes into being, develops, grows, acquires strength, and then it ages, becomes obsolete and dies.

It is obvious that the essence of negation consists in the fact that a constant process of renewal, negation, the dying away of old phenomena and the appearance of new ones goes on in the world. Consequently negation implies the development of phenomena, their passing into a new, higher stage.

In order to understand this it must be borne in mind that the process of negation, the dying away of moribund phenomena, proceeds in various forms. For instance, any machine wears out and then breaks. This is an example of negation as applied to its commonplace, everyday meaning, of which we have spoken above.

If a machine is simply destroyed and eliminated, such an act of negation does not provide any conditions for new development. Similar negations are to be found in life. Under certain conditions, however, the basic line of historical development is creation.

New phenomena, which arise in nature and society, also go their own natural path. In the course of time they age, give way to even newer phenomena and forces. And if earlier, being new, they displaced the aged, now they themselves, having grown old, are displaced by the younger, newer forces. This is the negation of the negation. And since in the world there is an endless quantity of phenomena, so the process of negation goes on uninterruptedly, endlessly, i.e., the process of negating the old and creating the new goes on continuously.



To what does it lead? Here is an example. The growing of crops covers a series of successive periods: the sprouting of the seeds, their growth and ripening, the gathering of the crops. In the course of sprouting the seeds lying in the soil cease their existence, cease being seeds. They undergo negation. New plants grow out from them. They bloom, fertilise and, finally, bear fruit, seeds. The whole process of the growing of crops is a negation of the negation.

It is true that we have arrived at where we have begun, but this repetition is on a new, higher foundation. It would evidently be useless to cultivate the soil if, at the gathering of the crops, people found themselves at the original quantitative result. The initial act (sowing of the seeds) and the final act (gathering in of the crops) in our example are two qualitatively different stages of development: the lowest and the highest stage. As a result this development does not take place on the same level, but progresses from the lower to the higher.

*Thus, the essence of the law of the negation of the negation consists in that, in the process of development, every higher stage negates or eliminates the previous one, at the same time as it raises it up to a new level and retains in its development all that is positive.*

Just as dialectical negation of the negation presupposes, eliminates or negates the old, so also does it presuppose preservation, but preservation of all that is positive that was in the old

phenomenon. Without this there can be no development. Dialectical negation acts as a connection with the preceding stage of development, as its conclusion. It expresses the sequence of development. The meaning of dialectical negation lies precisely in the overcoming of the previous stage of development, but not the discarding of it. For example, Marxist philosophy did not come into being out of thin air. It is the reliable heir and successor to all that is progressive that has been created by the philosophical thought of the past.

What then is the character of development?

It is well known that man began his labour activity with the creation of labour implements. At a definite stage of historical development stone implements gave way to metal implements. The latter are historically the "negation" of the stone implements, but in them are preserved all that was valuable in the former, for example, their ability to cut, their shape (as with the stone and iron axe), etc.

The invention of machines was a new process in the development of implements of production. The mechanised ring spinning-frame is a negation of the hand-operated spinning-wheel. But this is a dialectical negation, for the principle of the movement of the old hand-operated textile spinning-wheel is retained. That is how it always is with technique. New designs of machines are a negation of the old ones, but with the indispensable preservation of what was valuable in previous production experience.

Any development has this character, if it is produced by the negation of the negation. The highest stage is the highest, because it elevates, enriches development as a whole. An important conclusion follows from this: *development is a result of the negation of the negation, such development bearing an advanced, progressive character.*

This conclusion holds both in the development of nature and human society. In nature there is a transition from the inanimate stage to a higher stage—animate nature. In society this is a path traversed from the system of primitive communism up to socialism, the first phase of communism. We meet the same thing in the development of science.

Thus, we see everywhere the same regularity. Development proceeds progressively, i.e., from the lower to the higher, from simple to complex. Herein lies the essence of the law of the negation of the negation.

Those who are guided by the idealist, bourgeois world outlook have a different conception of the historical process. It is imbued with pessimism, i.e., with a gloomy, dismal outlook on life.

Seeing that the capitalist world is falling apart, some bourgeois philosophers and sociologists ascribe the decline of their social system to the crisis of culture, of thinking and humanism in general. They harp on "atomic catastrophe", "the end of civilisation", "the end of the world", etc. But science and practice refute these assertions of the bourgeois philosophers. The onward, progres-

sive development of nature and human society is an objective, indestructible law.

The success of the socialist countries in the development of economy and culture testifies to this. This is also confirmed by the plans for the development of the countries which have liberated themselves from colonial oppression.

If at times it appears as though the result of the negation of the negation is a return to the old, this is only in form, but it is not so in essence, because in the process of negation the old is enriched and rises to a higher plane.

The progressive development of nature and society is reminiscent of the spiral. It has a great number of rings, but they do not meet, they do not repeat each other. Have you ever seen how a circular staircase ascends? It seems as though the man is moving in circles, that in reality he goes round and round, but every time he goes up higher and higher. This is because he moves in a spiral. The law of the negation of the negation is expressed in this comparison.

Thus development proceeds in a "spiral" way, and with every new ring, i.e., with every new negation, something qualitatively new takes place, that which raises development to a higher stage.

In everyday life by "the new" we mean that which is done for the first time, what has recently appeared. In philosophy this concept is somewhat different, somewhat deeper. For example, if in the West some so-called "new" philosophical school springs up which, under the mask of the latest,

simply re-echoes the old, obsolescent, moribund ideas, then this cannot by any means be called a new phenomenon. On the contrary, this phenomenon is old, obsolete, and it has no future.

In life we often come across the old masquerading as new. This is very widespread and it is also a disguised form of struggle of the old against the new. Let us take such an example.

It is well known that the old forms of colonialism have utterly failed. Now the imperialists are endeavouring to enslave recently liberated countries with new forms of dependence by offering their "help" to developing states, setting up federations suitable to colonisers, etc. New colonialism, however, is no better than the old. Peoples who have liberated themselves understand this very well and they continue the fight against neo-colonialism.

*By the new, dialectical materialism understands that phenomenon which expresses progressive development. The new is advanced, progressive, that which is indispensably connected with renewal, with development from the lower to the higher.*

In what relation do the old and the new phenomena stand? First of all it is necessary to underline that the new does not arise apart from the old, but in its womb where there is usually either an embryo, a rudiment of the new, or the conditions for its birth. As the new develops, the old wears out, weakens, loses its strength, but the new grows and is strengthened. The new is always a dialectical negation of the old. It is born in the process

of the struggle of opposites. The invincibility of the new is a law of historical development. This is convincingly proven in our time, when new, young states have arisen on the ruins of the old system of colonialism. These are new invincible forces in the fight against imperialism.

Thus, we have examined the law of the transition from quantitative changes to qualitative changes, the law of the unity and the struggle of opposites and the law of the negation of the negation. Now let us acquaint ourselves with the categories of dialectical materialism.

## 5. Categories of Marxist Dialectics

### What Are Philosophical Categories?

People cannot do without general concepts. Physicists, for example, study such properties of various bodies as their ability to preserve the original state of rest or uniform motion. But they cannot confine themselves to individual bodies. They face up to the inevitable problem: Why are these properties found in all bodies, what is common to them? Thus, on the basis of the study of the properties of individual objects, physicists formulate the general notion of "inertia". The same thing can be said of weight—the measure of the mass of a body. Here it is also impossible to restrict the concept to the masses or weights of individual bodies, but it is necessary to formulate a general principle as to what mass is in general.



In exactly the same way a general notion of "inertia" is formulated in physics.

But are these categories established in specific sciences enough? Each one of them studies the general concepts of their own sciences. But we know further that things and phenomena of the world have the most general properties. Philosophy formulates these concepts.

The most general properties of things are reflected in *philosophical categories*, in those already known to us—"matter", "motion", "space", "time", "quality", "quantity", "contradictions", etc. *Philosophical categories are the most general concepts*. Consequently, it is impossible to confine oneself to the categories worked out in physics, chemistry and other individual sciences. Philosophical categories are formed in the process of cognition to represent the most general properties of the phenomena existing in the world. Later on we shall examine such categories as cause and effect, necessity and chance, necessity and freedom, content and form.

### Cause and Effect

What do the categories of "cause" and "effect" represent?

It is clear to us from experience that not a single phenomenon takes place without cause, "by itself". It is engendered either by the preceding development of the given phenomenon or by other phenomena. Nothing arises from nothing. Any

phenomenon has its own source, which engenders it. This is called its "cause". *Cause* is something that calls forth to life other phenomena. That which arises through the cause, or is produced by it is called the *action or effect*.

For instance, when peasants in a co-operative fertilise the soil under rice or cotton, they increase the yield of these crops. In which case the fertiliser is the cause, and the increased yield is the effect.

Thus, *the philosophical categories "cause" and "effect" reflect the relation between phenomena, in which one phenomenon, called cause, inevitably gives rise to another phenomenon—effect, and this relationship itself is called the relation of cause and effect.*

The relationship between the introduction of fertiliser into the soil and the gathering of the increased crops exists independently of our consciousness, within reality itself, in nature. From this example it is clear that any causal relationship is called forth by real existing things. That is why *the most important feature of the cause-effect relation is its objective character.*

Thinkers who maintain the view that there exist in nature and society in general causal relationships between phenomena, independent of man, are called *determinists*. The word "determinism" is derived from the Latin "determino", which means "I determine". Consequently, the determinists consider that natural phenomena are predetermined by this or that cause, this or that

regularity, the phenomenon conforming to the cause.

All the phenomena that happen in the world are necessary precisely because they are defined or, as the philosophers put it, determined.

Throughout the whole history of philosophy the determinists led the struggle against the idealist negation of causality, against *indeterminism*. The idealists of various shades and trends proceed from the claim that man creates causality for "convenience", for imparting order to the "chaos of natural phenomena". Thus the subjective idealist Berkeley attempted to disprove the very concept of causality. It is also the same with other idealists who in fact tried to negate the objective existence of causality.

They substantiated their belief in the subjective character of causes as follows. A hot candle scorches every time we touch it. But from this, they say, it does not follow that it will always without fail produce a burn. It has been so a million times, but the million and first time may be different. The fact that a burn has always been produced up to now by a hot candle does not mean that it is its cause.

They allege that these two phenomena—hot candle and burn—simply exist side by side, but that it does not follow from this that a causal relation exists between them. This kind of reasoning is false because we do not judge causes on the basis of some observations only. We investigate them on the basis of experience and practice, which

convincingly disclose why, for example, a hot flame necessarily burns.

Endless causal relations exist on earth, but not all of them play the same role. There are the main, basic ones among them. They must be singled out first of all.

How is this to be done?

We have noticed that some planted corn did not sprout. We look for the causes. Inasmuch as there are many connections and relations between phenomena, so causes are many. However, analysis always shows that there are the basic, main causes, i.e., those that determine the remaining causes. In our example, it may be insufficiency of heat, excessive moisture, the wrong time of sowing, seeds of poor quality, etc.

It is important to elucidate the basic cause, for this provides the possibility of decisively influencing the given effect. But this does not by any means signify that the lesser causes can be disregarded. It is necessary to disclose them, and if they obstruct our purpose we must try to eliminate them.

Inasmuch as a cause produces an effect, a definite relationship exists between them. But the metaphysicians understand it one-sidedly—as the influence of cause on effect only. But has effect any influence upon cause? The metaphysicians cannot correctly answer this question because they regard cause and effect as opposites, divorced from each other.

They reason that the given phenomenon may either be the cause or the effect. If it proves to be a cause, then it cannot be an effect.

But this is not true. There is an established *interaction* between cause and effect. Of what does it consist? Let us show this by an example. Matter, being produces consciousness, but consciousness in turn influences being, and is actively connected with it. It is obvious here that there is interaction, interdependence between cause and effect, their mutual influence upon each other.

But does this mean that cause and effect depend upon each other to an equal extent? Of course not, for in the cause-effect relationship cause invariably plays the decisive role. It is the cause that determines the given cause-effect relation, while effect plays an important role, but nevertheless a subordinate one. It is important to understand this.

What is considered as the cause in a given cause-effect relation is not a matter of indifference to science, as in the question "What is considered primary, matter or consciousness?" However, this also does not mean that the influence of effect upon cause can be neglected.

Besides what has been said above, the concept of interaction has a second meaning. Consider the following example. The plough cultivates the field better than the hoe or "daba". This gives a bigger yield, and a bigger harvest. The peasants obtain more produce, and so on. The result is that a good cultivation of the field acts here as the

effect relative to the plough, and as a cause of the higher yield. This in turn is the cause of the improved prosperity of the people. The result is a chain of cause-effect relations.

Pondering upon a chain relation of cause and effect, we see that it consists of connected phenomena. Each cause or effect must be examined not in isolation from, but in connection with, the phenomenon which engendered it, or is engendered by it. Then one and the same object is at the same time both a cause and an effect. It is a cause of that phenomenon which it called forth. But in relation to the phenomenon which produced it, it is an effect. With such an understanding cause and effect cease to be separate, opposite poles. They are links in a complicated chain of interaction of objects and phenomena. Thus, in the words of Engels, *in the world there exists a universal interaction, consisting in the fact that cause and effect constantly change places; that which in some conditions of place and time is cause, in other conditions becomes effect and vice versa.*

The Marxist-Leninist doctrine of causality is of great significance in refuting various kinds of superstitions.

Superstitious people often consider that two phenomena are associated by the cause-effect relation, proceeding solely from external signs, because the two phenomena follow each other in time, when no causal relation really exists between these phenomena.



Only when man understands the real, not the imaginary, causes of phenomena, does his fear and with it his superstition disappear. Here is an example. Travellers in Africa at one time asserted that they beheld "in the sky" a huge garden of paradise. Sometimes they told of an airy ship with ghost-sailors being seen in the sky. And then everything vanished. What could this be? There was all sorts of wild talk about these phenomena so long as there was no clear cause. But later scientists discovered the cause of these uncommon phenomena. It turned out that in hot countries the air forms layers of varying density. During quiet, still weather, these may act like a huge mirror. Objects present on the earth or at sea are reflected in this "mirror"—be they gardens, ships, etc. For this reason the people did not see a garden of paradise, but the reflection of gardens really existing on the earth; not airy ships, but the reflection of ships floating on the water. It was enough to find the causes of these phenomena to erase superstitious fear of them.

Thus knowledge of causes releases one from superstitions.

The study of causes also helps us to understand one of the interesting natural phenomena—the existence of *expediency* in it.

Even a cursory glance at the surrounding world is enough to reveal its amazing harmony. Expedience in nature is revealed, for example, in the adaptability of animals and plants to their conditions of life, to their surroundings.

The idealist philosophers were unable to explain that at every step the facts of expediency and arrangement are to be met in nature; they began to assert that the origin and development of all things in nature is not determined by material causes, by the laws of nature itself, but by the aims or designs they serve, by the "purpose" for which they exist. This view is called teleologic (from the Greek word "telos"—end).

Ridiculing similar reasoning, Engels remarked that according to the teleologic view of the world, the cats were created in order to devour mice, the mice—in order to be devoured by the cats, and all nature—in order to prove the wisdom of the creator.

Even today the idealists employ teleology.

But does teleology embody some kind of scientific thought? Let us consider.

First of all it is necessary to bear in mind that no matter how much we worry over the question of "for what purpose" this or that phenomenon appeared, we do not move one step forward in the understanding of its nature. In order to understand phenomena, it is necessary to know what causes made them appear, what engendered them, with what they are connected. Only by posing the question of why, by the strength of what causes does the apparently astonishing expediency exist in nature, can we understand the essence of phenomena. The teleological point of view is directed precisely against such scientific, causal explanations of natural phenomena.

Here is a graphic example. Before a storm fish swim away from the littoral zone in order not to be thrown onto the shore. The medusas (jellyfish) disappear too. From the point of view of these living creatures this is an expediency.

When similar behaviour of living creatures is analysed it is difficult to get away from the thought that it is a miracle or "wonder". But when science discloses their natural causes everything becomes clear. It has been established that when a storm rages far from the shore sound waves that are elusive to the human ear travel to the shore. They spread for some thousands of kilometres. That is why a storm gathering far off announces its coming long before it reaches the shore. Unlike men, sea animals are able to catch these signals. That is why they "have a foreboding" of the storm and get away to places of safety. Their "wisdom" is based on real, natural causes. There is nothing supernatural here. It is evident from what has been said that only science can explain the facts of expediency.

What can explain, for example, the expediency of living nature? Darwin proved that this expediency is achieved in a natural way. In the struggle for better adaptation to the conditions of life, or, likewise, in the struggle for survival, it is inevitable that the excellent species, those that are better adapted to their surroundings, survive. On the basis of natural laws and causes, the expedient arrangements in living nature,

which today often amaze us, have been produced in the process of many centuries of evolution.

Thus, we have been acquainted with the categories of cause and effect and their significance.

But one must bear in mind that causes can be various: some of them call forth necessity, others chance.

#### Necessity and Chance

One day the French scientist Antoine Becquerel (1852-1908) took from the famous physicist Pierre Curie (1859-1906) a quantity of radium to perform a lecture demonstration to his students. He placed the tube of radium inside his waistcoat pocket. After a few days Becquerel discovered on his skin, in the place against the waistcoat pocket, a colouring reminiscent of the form of the tube with radium. This was an accidental circumstance which promoted the study of the influence of radium rays on the human organism. It appears that without this accident people would not have known anything about radiation disease and death from radium. Is this true?

There exist two opinions. Some maintain that everything is necessary, nothing is accidental, in the world. Others maintain the contrary, that everything is accidental in the world.

Which is correct?

Neither one nor the other is correct, because they separate necessity and chance from each

other. For example, what is the basis of our belief that after the night the sun rises and morning breaks? This belief is based on practice, on many centuries of experience, on the knowledge of natural laws. The change of day into night is produced by the rotation of the Earth on its axis, the change of the seasons by the movement of the Earth around the Sun.

The philosophical category of necessity serves to designate such constant interrelations of phenomena. *Necessity is not that which may or may not happen, but that which certainly must happen, because it is produced by profound causes, and follows from the internal nature of the phenomena.*

And does chance exist? We can begin here with an example. A man met with an automobile accident: he lost his life in an absurd way. Why do we call such phenomena accidental?

Chance happenings may or may not happen. Could it be that the life of a man is so predetermined that it would inevitably be cut short in an automobile accident? Of course not. Such happenings cannot be called necessary. These are chances. The whole internal course of the development of these phenomena did not proceed in the direction of what came to pass, of what had happened.

In October 1957 when the Soviet Union for the first time in history paved the way to the cosmos and launched a sputnik, some bourgeois propagandists in the West began to assert that this was an accidental and unique achievement. But is this

really true? Of course not. This success was based on the socialist system itself, on the attention given by the socialist countries to the overall development of science and technology.

The sputnik flight testifies to the coming of age of Soviet technology, to the great achievements of Soviet science in such decisive branches as mathematics, physics, chemistry, metallurgy, and to the progressive system of education in the Soviet Union. How can this be by chance? A chance happening is one that does not follow from the inherent nature of the given process. As to the sputnik—this is the outcome of the whole history of the development of the Soviet Union.

Consequently, in order to answer the question of whether or not a phenomenon is due to chance or to necessity it is essential to elucidate whether or not it is engendered by internal or outside causes.

Is the destruction, for example, of a fruit orchard by a hurricane due to chance or to necessity? The hurricane, of course, has its own causes. But do hurricanes inevitably destroy orchards? No, and this is why. A hurricane does not happen without causes. But relative to the orchard in question these were outside, transient causes, not following from essential conditions in the growth of the orchard. Hence the event itself is accidental. The destruction of the orchard was not at all necessary. In relation to the given orchard the action of the hurricane is accidental, although similar events often occur.



It follows from the aforesaid that chance and necessity are in opposition to each other. However, can a conclusion be drawn from this that there is nothing in common at all between chance and necessity?

The metaphysicians reason something like this. What is necessary cannot be accidental, and what is accidental cannot be necessary. But is this so? In life, in reality there exist many things in common between chance and necessity. They are intimately connected. It is impossible to separate them from each other. In studying chance one must always be able to discern necessity, the law on the basis of which it arises.

From this it follows that in nature and society there are not "only" necessary or "only" chance phenomena. In actual reality the one and the other exist together, permeating and interacting with each other. Necessity often comes in the form of chance. That the mango tree grows in hot climates is no chance happening. But that this tree has so many leaves and, besides, that each of them has its own size and form, depends upon many accidental phenomena, such as the amount of rainfall that watered it, the winds that blew on it, etc. The result is that there is an interlacing of chance and necessity.

The metaphysicians believe that the phenomenon of necessity has its cause, while chance is without cause. But not one phenomenon can arise without cause. Chance phenomenon has its cause too. Where is then the difference?

Here is the difference. The cause in the phenomenon of necessity is something internal, but for chance, the cause is something external to the phenomenon.

Thus, for example, the shortage of products for the population of the developing countries is conditioned by the weak economic development of these countries, inherited from previous colonial regimes. This is the internal cause of the shortage of products in these countries. But the quantity of products can shrink under the influence of external causes, such as floods, eruptions of volcanoes, hurricanes, etc.

Thus, the dialectical understanding of chance recognises the fact that everything in the world has its cause. This, however, demands that we distinguish the causes of chance, i.e., those that could and could not happen, and the causes of necessity, i.e., those that follow from the internal processes of the development of the given phenomena. For this reason not all causally determined phenomena follow from necessity, as the metaphysicians think. Acknowledging that everything in the world is causally conditioned, dialectical materialism recognises also the presence and action of chance. Science gives primary consideration to the disclosure of necessity, that is, to the laws of developing phenomena, precisely because necessity is called upon to reveal the direction of development.

The well-known Soviet scientist I. V. Michurin (1855-1935) sharply criticised those scientists who relied upon chance, and not on the study of the

laws of the development of nature. He said that we could not wait for favours from nature; we should wrest them from her—this was the task of science.

Any geologist knows that if prospecting were led at random it could not have made so many discoveries. For successful geological prospecting it is indispensable to study the laws of the structure of the earth's crust and take them for a guide in practical activity. Then we shall not depend upon "happy chance" and shall surely achieve success in finding minerals.

If chance phenomena may or may not happen, can we study them? What laws do chance phenomena obey? In order to answer these questions let us first conduct a small experiment. Let us toss a coin in the air. It lands either face up or face down. It is impossible to know beforehand on what side the tossed coin will land. But if we toss the coin, say, 5,000 times, then we shall discover that approximately it will land face up 2,500, and 2,500 face down. It turns out that it has its own law. This law governs a complex of accidental phenomena.

Let us take another example. What will be the sex of an infant to be born in a family, a boy or a girl? At first glance this is not subject to any law. In some families only boys may be born, and in others only girls. Observation over a large number of families, however, helped to discover a definite regularity. The birth of boys and girls follows

this proportion: for every 100 girls born there are 105 boys.

What do these facts show? They show that the order, the regularity of chance phenomena remain unnoticeable with a small number of observations, but with a sufficiently great number of facts they come out. This regularity is called *statistical regularity*, i.e., the law of the classes of chance phenomena as a whole.

This means that we can study chance phenomena, find the laws of their existence. Contemporary physics studies the movement of electrons and other particles in the atom, and it discovered that the movement of microparticles is subject to statistical regularity.

As we see, contemporary science studies not only the phenomena of necessity but also those of chance. The study of chance phenomena has great practical significance.

Many chance happenings are beneficial to man; there are, however, those that bring grief and misery: winds from the deserts, droughts, floods, and other common calamities. On the basis of the study of the laws of necessity, science strives to control their activity. But how may we restrict activity which is not dependent upon man? To eliminate accidents is not always possible, but to eliminate their undesirable aftereffects is possible and should be done. For example, it is not yet possible to eliminate accidents connected with the caprices of nature, which can cause loss of harvests or even wipe out plantations. But to restrict

the aftereffects of undesirable accidents is possible, proceeding from the fact that these effects stem from the conditions under which they originate. For this reason it is necessary to create conditions wherein the damage due to accidents may be reduced to a minimum or completely eliminated.

This is particularly important in agriculture, where results depend upon the caprices of nature more than in industry. Irrigation, fertilisers, and application of agrotechnique provide a measure of protection of agriculture from the damage caused by unfavourable accidents.

*Thus, man is not powerless before the onset of undesirable accidents. He is able to eliminate or to reduce to a minimum their destructive effects.*

#### **Necessity and Freedom**

History shows that the victory of socialism over capitalism is an historical necessity. The peaceful coexistence of the two systems—socialism and capitalism—in contemporary conditions is an historical necessity.

Is it then worth while to exert effort in order to call to life that which must inevitably be born as a result of natural-historical necessity?

For one hundred years a controversy between the so-called *fatalists* and *voluntarists* raged on this problem.

The voluntarists attribute the development of the world to the decisive role of human will (from

which the term "voluntarism" comes). They do not acknowledge historical necessity as governed by objective conditions and laws. They understand freedom as the lack of "restraint" of the human will. But such a view is mistaken. Nothing in the world arises and moves without causes. Hence the human will does depend upon something and does not act arbitrarily.

The view of the fatalists is the opposite (they got this name from the Latin word "fatalis", which means "fatal"). They believe in an inevitable fate, and this conception is based upon the belief that every thing and event in the world is predetermined beforehand and man has no power at all to change it.

The argument of the fatalists dooms men to inaction. If men hold the fatalistic outlook they should sit with folded hands. This gives rise to a feeling of hopelessness, of doom. That is why such a theory undermines the belief of the labouring masses in their strength, in the possibility of changing the reactionary systems of class exploitation.

The following example will show how harmful is the fatalistic attitude towards the phenomena of nature and of social life. Some people in the West try "to prove" the fatal inevitability of war, and of the armament race. In their opinion men are powerless before them. But in reality this is not so. The policy of struggle for the preservation of peace, upheld by the Soviet Union, other social-



ist countries and the young independent states, serves to avert the outbreak of a new world war.

Thus, both points of view—voluntaristic and fatalistic—are wrong. They approach the solution of the problem metaphysically. They either recognise freedom, or necessity. Either everything takes place as a result of the free activities of men, in which case it cannot be necessity; or everything is produced by the power of necessity, of regularities, and in this case there cannot be freedom. Freedom is incompatible with necessity—such is the basis of their arguments.

What then is the correct solution to the problem? The word "freedom" in everyday life is often understood as meaning absolute, unrestricted freedom. For this reason many think that regularity, necessity excludes freedom. As soon as there is necessity, or regularity, then there is "restriction", "impediment", which means there cannot be freedom. Thus, to solve the problem of freedom implies the solution of the problem of whether freedom can be subordinated to and reconciled with the laws of natural necessity.

Let us begin with an example. Penetrating into the cosmos requires that we overcome the Earth's gravity which "rivets" man to the Earth. But can this be done "without taking into account" this law, and in spite of it, so to speak? Of course, not.

For a spaceship to enter orbit it must develop such speed that its centrifugal force is greater than the force of the Earth's pull (this hap-

pens at a speed of over 8 km/sec). Scientists have successfully launched the spaceship into the cosmos not in disregard of gravity, but through a profound study of its operation.

When the Soviet scientists launched a rocket to the Moon, they of course took into account the law of gravity. The rocket was propelled with a strictly defined speed, due to which it overcame the Earth's pull. Then the attraction of the Moon made the rocket "land" on the Moon. This example shows excellently how incorrect are those who argue that we supposedly lose our freedom when we submit to the laws of necessity and who try to find a way to circumvent these laws. Such people understand freedom as freedom from laws. This is wrong.

In what circumstances does genuine freedom manifest itself—in a society where no laws are "acknowledged", or where these laws are recognised and utilised? The answer is clear: where these laws are recognised and utilised. Lenin expressed this thought thus: It is blind necessity so long as it is not understood. But if necessity or law is understood, if we have subordinated its action to our interests, then we are masters of nature. Engels, in his work *Anti-Dühring*, wrote: "Freedom does not consist in the dream of independence from natural laws, but in the knowledge of these laws, and in the possibility this gives of systematically making them work towards definite ends."

This is true both in relation to natural phenomena and social life. Prior to Marxism there was no

knowledge of the laws of social development. The people remained slaves to historical necessity. Marxism disclosed and mastered these laws. This was the first step towards arming the people with the knowledge of these laws. The workers became free to decide their own fate, to build their lives anew in accordance with historical necessity.

The freedom of man consists in the knowledge of the laws of development of nature and society, in the ability to utilise these laws in practical activity. Human freedom cannot go beyond the limits of necessity.

Contemporary bourgeois philosophers regard man as free when he can choose any decision for his activity, disregarding everything else.

The essence of the matter is that there is no such freedom. This is graphically illustrated in the fable about the quarrel between the weathercock and the magnetic needle of the compass.

"I am free, I turn in different directions, wherever I please, today this way, tomorrow that way," boasted the Weathercock. "And you, whatever way they turn you, you again come back to show the same one fixed direction."

"What freedom you have!" objected the Magnetic Needle. "Without your will you are dangled here and there. You are ordered around by the winds. There you turn at their will. Your freedom is short—from one puff of wind to another. You are influenced by the first and nearest wind, but, as for me, I do not depend upon the caprice of nature

and I maintain one direction always. With my aid anyone may find the correct way."

Pondering on the meaning of what has been narrated, it is not difficult to see that it is impossible to understand "freedom" to be choosing *any* decision for one's activity, disregarding everything else except one's own desire.

Some people claim that in capitalist countries a person chooses his way of thinking completely "freely", and that his desires and habits are the result of "individual freedom". But in reality he is a slave to those conditions under which he lives, to the instincts of private ownership that thrive in that social order. Here there is not a shade of "individual freedom" and there cannot be, in the sense that bourgeois scientists treat it. Here everything is subordinated to necessity. In the conditions of capitalism this necessity manifests itself in the form of blind social forces, which can be compared to driving winds.

In the conditions of socialism, where action is dependent upon the cognition of necessity, freedom is another matter. Here laws no longer operate as blind social forces. The activity of the people is based on a profound understanding of the regularities governing social development.

The enemies of Marxism maintain that since Marxism considers the development of the world as a result of the operation of objective laws that do not depend upon the will and consciousness of men, then it must inevitably lead to fatalism, to the negation of the active, free activity of men.

By this they want to say that the Marxists understand the development of the world as a fatally predetermined process. And if the Marxists speak of human activity as "free", then here, they say, they contradict their own doctrine.

If the coming of socialism is inevitable, the critics of Marxism remark, then why conduct a struggle for it? They hold that one should simply wait for its advent. Why organise a party? Why prepare for the victory of socialism? Nobody, you see, creates a party in order to bring about a solar eclipse, they observe.

Marxism-Leninism has nothing in common with such a vulgar understanding of the situation. It recognises the necessity of the victory of socialism, but not in the sense that it is achieved automatically.

The key point is that the "necessity" of natural phenomena is essentially distinct from the "necessity" of social phenomena. Necessity in social development is realised differently from the changing of day into night or the coming of spring and summer. These phenomena take place without the participation of man.

As for society, everything is the result of the work of man, his labour, productive, revolutionary activity. But does this mean that social necessity, that is, the laws of social development are created by men?

Of course, not. Social necessity is as much objective as the necessity of nature. But, as we have already seen, there is an essential distinction. In

nature necessity is not supposed to be due to the activity of men. In social life man's activity revolves around those conditions without which necessity is not realised. If men do not act, or act without clarity of purpose, then this means that their efforts at the moment are not sufficient to achieve their aim.

Is it possible, for example, to avert a war without the active struggle of the broad masses of the people against it? Of course not. If the peace forces of the world are idle then inevitably the dark forces of war become active. Peaceful coexistence may come under threat. For this reason, the issue of whether there will be peace on earth or whether mankind will be plunged into the catastrophe of a new world war depends upon the people themselves, upon their determined and positive action.

Acceptance of the fatal inevitability of war would reduce the activity of the masses in the struggle for peace, would demoralise the progressive forces of the world. And, on the contrary, the awareness that war is not fatally inevitable promotes the broadening of the ranks of peace supporters, rouses the peace fighters to action.

Thus, historical necessity not only does not exclude the relationship of man to the events taking place in the world, but, on the contrary, presumes it. Marxism assigns tremendous significance to the positive, free activity of men, to the so-called subjective factors, i.e., the forces depending



upon subjects, people, their knowledge, positive activity, and ability to organise work.

The role of subjective factors, the free, positive activity of the people, increases considerably during the period of building socialism and communism. However, this positive activity of the people itself is based upon the objective conditions from which it arises. The concept freedom is distorted by bourgeois philosophy and sociology. Invariably they arrive at "ideal spiritual freedom". They argue thus: let it be agreed that you are a slave in chains, but if you believe that spiritually you are not constrained by your status, you are free.

In bourgeois society everybody seems to be free. Nobody forces the worker to work, or the capitalist to offer him work. The worker may or may not go to the capitalist. This is his business. The ideologists of imperialism have even invented a special term, "free world", for the capitalist world. But let us examine in reality of what this freedom consists in the so-called free world.

For man to be free he must be master over the conditions of social life. Can he realise this in capitalist society, which is based on exploitation and oppression?

History shows that freedom in a society, where exploitation of man by man, and national and colonial oppression exist, is an illusion, a deception of the masses. Where private ownership of the means of production and its consequence—exploitation of man by man—exists, there is no

freedom for the workers, because with these conditions freedom for the people has no real objective basis. It has only a formal significance to them. The people cannot make use of it. Freedom is enjoyed by the exploiters alone.

Freedom, without material basis, freedom pure and simple, like freedom as an idea, is similar to a flower without roots and soil. No matter how beautiful it is, it inevitably withers and dries up. In a society based on the power of money, as Lenin taught, where the masses of the labouring people are impoverished and a handful of millionaires live as parasites, there can be no real, genuine freedom.

The working people enjoy political and social freedom only after they have taken power into their own hands and built a new society without exploiters and oppressors.

Man feels himself free only in conditions where he has the material basis needed to achieve his aim and desire. Socialist society provides man with this basis. This was precisely why Engels pointed out that *socialism is a leap from the kingdom of necessity to the kingdom of freedom*. It is only in the conditions of socialism that men are in a position to bring the process of social development under their control, and freely manage their own fate.

The historical experience of building socialism in the Soviet Union and other countries has confirmed this conclusion of Engels. In a socialist society men are freed from the fear of losing their

work, from uncertainty of the morrow, from exploitation and national oppression. Under socialism these have already been achieved. But the movement of man along the path of his emancipation does not stop here. The building of a communist society is a higher stage in the emancipation of man from the elementary forces of nature. All the conditions for free creative work, for the development of all man's gifts and talents will be created. At the same time the last barriers on the path of man to the genuine kingdom of freedom will be removed.

#### Form and Content

Any object or phenomenon has its definite qualitative characteristics, its essential features. Their sum-total makes up the content of the given object. For example, the content of a book is some events, some people and the ideas they depict. But form (that is language, artistic images and descriptions) is used by the author in order to communicate the content in a more precise way.

As you see, content must, so to speak, have a corresponding form. It does not, and cannot, exist without its corresponding form. Any object or phenomenon, in every case, possesses not only content but also form. Form is the organisation, the structure of content, making possible its existence.

Thus it appears that form and content exist in unity. In any object or phenomenon they are

always intimately connected with each other. The question arises, what role does each of these categories play? In this unity, which factor is the main one, the determinant?

It is not difficult to see that the form of an object or phenomenon depends upon its content. This is shown by the following example: the types of peasant co-operatives are not arbitrarily determined, but are called forth into life by the level of development of agricultural production to which they must correspond. In connection with this, among the newly liberated countries various definite forms of peasant co-operatives are established: associations of mutual help, supply-marketing co-operatives, etc. Consequently, content determines form.

The dependence of form upon content does not mean that the content in question can call forth into life only one single form. This is clearly shown in examples from social life, where form is called forth by content, and is always connected with definite, concrete historical conditions, which themselves vary in time and space. That is why there cannot be one single fixed form.

Social upheavals such as national-colonial revolutions are accomplished in various forms. They can either be peaceful or non-peaceful. Some old forms of government may be put to new use in the course of the revolution, in order to place them at the service of the people, to impart to them a new content.

But if form is subordinated to content, does this mean that it does not play any role at all? No, to underestimate form is not wise. Although it depends upon the content, it exerts an active influence upon the latter. Take the following example. A professor is delivering a lecture. He has collected much material, the facts themselves are very interesting. But the form of presentation is not vivid, is not interesting. He expounds sluggishly, dryly. Does such a form affect the content? Of course it does. The listeners take it in with great difficulty. Another professor gives these very facts vividly, interestingly, clearly. The result produced is completely different. The listeners learn everything. The lecturer achieves his aim.

It appears that content does not only affect the form, but the contrary is also true: form affects content. Besides, this influence can be of two kinds. If form corresponds to the content, then it promotes the development of the latter. And if form does not correspond to the content, then it obstructs, it arrests its development.

The examples given show that in practical activity it is impossible to assign a decisive role only to content, forgetting the influence of form. The counter-effect of form must be taken into account. For example, lectures should be not only interesting in content but should be interestingly and brightly delivered. Which means that form should promote content, should help its development.

But how may we know if form obstructs the development of content?

This is not difficult to know if one bears in mind that all things are in the process of development. Hence content never stands still in one place, it develops. Form is also developing. But it is more steady, less mobile. It stays with its content. Form and content are in opposition to each other. When such opposition develops into a contradiction between form and content, it needs to be resolved.

New inventions initially arise from older forms. Thus, the first automobile was an exact copy of the carriage. But with the lapse of time, the old form became an obstruction in the path of development of new qualities of automobiles, i.e., its new content. As long as the automobile did not take the streamlined form, its old structural form restrained the increase of the speed of its movement.

In social life we also meet with the necessity of resolving the contradiction that arises between form and content. For example, the form of rule through tribal chiefs and elders of big families in a number of independent states interfered with the task of building a new life. This called for change to another form of rule: by representatives of the government or the party and even by local elective bodies.

What then are the means of solving the conflict between form and content? It is solved differently in various countries and spheres of life—in a



peaceful or violent way, depending upon conditions and time. In the conditions of the socialist society and in the countries entering the path of non-capitalist development, these contradictions are resolved by gradual transformation of the old forms, carried out on the initiative of the party and the government.

He who exaggerates the role of form, without seeing the content behind the form, brings great harm. This leads to formalism. For instance, some artists draw pictures which do not have any content at all. They smear the canvas with a confusion of spots of blotches, and the picture is ready. This is extreme formalism in art—the so-called abstract art, art devoid of content. True art demands that the loftiest artistic form completely correspond to the profound content.

Formalism is found not only in art, but also in the attitude to work, to people. Formalism brings harm everywhere. The formalist does not see the living man, his needs and requirements. In practice the formalist is the same as the bureaucrat, who saps and ruins vital matters. That is why it is necessary to fight formalism.

Thus, we have examined the basic laws and categories of dialectical materialism. It is convenient to examine the categories of essence and phenomena in connection with the theory of knowledge. The question arises, in what way does science cognise these phenomena, these relations, these laws and their essence? It is with this problem that the following chapter deals.

## Chapter V

### THE THEORY OF KNOWLEDGE OF DIALECTICAL MATERIALISM

#### Essence and Appearance

Science and practice convince us that things and objects that exist in the world have two aspects: the internal, which is hidden from us, and the external, which is accessible to our perception. When we become acquainted with things through the help of the sense organs, in the beginning we perceive only some individual manifestations of the given things, only the external connections between them. In other words, we are confronted initially by a world of appearances.

But science and human practice as a whole do not confine themselves to simple perception and description of individual phenomena, facts or events; they have as their aim to discover the essential, stable laws of phenomena, their causal dependence and internal connections. Natural and social laws are not perceived directly, they do not coincide with appearances. To discover the laws of development means to understand the internal

nature of the processes, i.e., to scrutinise those factors which connect the individual phenomena, which constitute the main and the basic aspects in them.

Behind the diversity of appearances is hidden their essence, i.e., their internal connection, their basis, their regularity of development.

In capitalist society, for example, we see such phenomena as crises, unemployment, impoverishment of the workers, bankruptcy of the farmers, strikes, demonstrations against monopoly oppression, etc. Behind these phenomena hides the essence of capitalism, which is that capitalism is the rule of exploiting and oppressing classes.

As you see, *the essence is the expression of the inner connections of the objective world; it is the basis of a variety of phenomena. Appearance is the revelation of the essence, the outward form of its manifestation.* Thus, the essence is not something existing outside and independent of appearance. Essence and appearance reflect different aspects of one and the same reality: the essence reflects its inner and fundamental aspects, while the appearances reflect its outward and directly apparent aspects.

The unity of essence and appearance is not to be taken as though the two directly coincide. If everything were on the surface of phenomena, then it would have been possible to disclose, immediately and directly, the laws of natural and social development. But this is not the case: to know the essence requires long and painstaking

work of the scientists. To reveal the essence demands scientific study based on practice.

It seems to us, for example, that the Sun revolves around the stationary Earth. But this appearance contradicts the essence as discovered by science and experiment. In reality the Earth revolves around the Sun.

Often enough in social life the essence is deliberately distorted and disguised by obsolescent, reactionary forces.

For example, the imperialists offer their "aid" to countries recently liberated from the colonial yoke. But in the form of "aid" they strive to subjugate these countries economically in order to establish colonialism in another form. The essence of imperialism is thus deliberately masked. It appears under the guise of a "friend" of the people, particularly the peoples of the developing countries.

The idealists divorce essence from appearance. A typical example of this is the philosophy of Immanuel Kant. He divided reality into the world of "appearance" and the world of "essence". This latter world, or "things-in-themselves", as he called it, is not within the reach of knowledge. In opposition to this, dialectical materialism proves the possibility of knowing the essence of things, the laws of the development of the world.

Knowledge is a tremendous force. Armed with it, man is unconquerable. Had we not known what is going on in the world we would not have been able to live and work in it. Without knowledge it

would have been impossible to achieve not only such accomplishments of human ingenuity as sputniks, the cosmic rockets, atomic energy, but it would have been impossible to accomplish even very simple things.

And yet there are still some people who maintain that man cannot have a true understanding of the world, i.e., cannot know it.

Even in olden times people would say, knowledge is light. But not everybody loves the light. And this is understandable. To illuminate the world by the torch of human reason means to see much, to know much, and to be able to do much in it.

It is precisely this that all and every one of those who have sown darkness, and oppressed the peoples fear, because man is increasingly emancipated from socio-political and any other enslavement, is establishing the peoples' power, and building a new life, guided by knowledge. It is not fortuitous that peoples who have cast off colonialism, and driven away the French, British, American and other oppressors immediately set about liquidating illiteracy. They reveal a thirst for knowledge. But there are people who do not believe in our knowledge. Who are these people?

Some idealist philosophers assert that the world is unknowable. They are called agnostics.\* Agnos-

\* V. I. Lenin, in his work *Materialism and Empirio-Criticism*, describes this philosophical trend thus: "Agnostic is a Greek word: *a* in Greek means "no", *gnosis*—"knowledge". The agnostic says: "I do not know if there

ticism denies the possibility of knowing the world. It is widespread in contemporary bourgeois philosophy.

As to the arguments the agnostics offer in justifying their outlook, are they well-grounded? It is obvious that to perceive the world is possible only through the sense-organs—sight, hearing, sensation, etc. But these, the agnostics claim, are unreliable witnesses. How many times have our sense-organs deceived us? A teaspoon in a glass of water looks bent. From a distance a house looks smaller than from a point nearby. In view of this, the agnostics conclude, it is impossible to believe the sense-organs. Is this so in reality?

To listen to the agnostics, one would think that all that man can do is to look helplessly at the things surrounding him. But in essence this is not so. In this world man is not a mere witness, but a worker, a creator. *In work, in practice, he has all the possibilities and everything he needs to examine the evidence of his sense-organs, to go deep into the essence of things, to penetrate into the depths of the phenomena under study.* In our examples, it is enough just to draw the spoon from the water to be convinced that it is straight.

As you see, the problem of whether it is possible to know the world is decided in practice, in

is an objective reality which is reflected, imaged by our sensation; I declare there is no way of knowing this." (V. I. Lenin, *Collected Works*, Vol. 14, p. 128.)



life. Man penetrates into the essence of the surrounding world, comes to know it, in the process of labour, in productive activity.

But how do people get to know the world?

### Stages of Knowledge

Imagine that we were sent to study the work of a co-operative. With what are we going to begin? Of course with the gathering of facts: how many workers are there in the co-operative? are advanced agrotechnical methods applied? what harvest was gathered? how is work organised? etc. And only then can one arrive at a definite conclusion on the life and work of the co-operative.

That is how we act in all matters. All those whose work it is to discover, to know natural laws, *begin with the collection of facts*. This is accomplished either with the help of experiments, or by simple observation, but in any case it is always through the sense-organs. This is the *first stage of knowledge—sensory knowledge or active contemplation*.

When a sufficient number of facts have been accumulated, our mind analyses them, compares one with the other, and then draws a definite deduction. This is the *second stage of knowledge—rational, logical knowledge or abstract thinking*. But the second stage of knowledge, like the first one, is accomplished on the basis of practical activity. We obtain facts for analysis from practice,

from life. And, conversely, those conclusions which we have deduced from these facts are needed in life, in practice. We need them in order to improve, let us say, the work of the co-operative, which we have studied, in order to raise the harvest.

Thus, *the process of obtaining knowledge consists in passing from sensory to logical knowledge, and is based on practice*. "From active contemplation to abstract thought and from it to practice—such is the dialectical method of knowing truth, of knowing objective reality," wrote Lenin.

The following incident is well known in the history of science.

One day a patient was brought to a clinic. She had all of her main sense-organs paralysed: there was neither sight, hearing, smell, nor taste. Only the tactile sensation of one hand was left. This was the sole channel through which knowledge of the world penetrated to the patient. But how scanty it was. The patient was unconscious practically all the time. What does this fact show? It shows that the sense-organs are provided with channels through which knowledge of the surrounding world penetrates to the human brain. The effect on them of the phenomena of the outside world produces sensation. Otherwise, except through sensations, we cannot know anything of the world around us.

Loss of one of the sense-organs only can be partially compensated by others. But if man is deprived of all his sense-organs he would be

helpless in the study of reality. He would simply not be able to know anything of the world. *Sensation is the result of the action upon our sense-organs of the objects of the outside world.* And that is precisely why it gives us a true, correct knowledge of the world surrounding us.

But how are we going to prove that sensation gives us a correct understanding of the world? This is proved first of all by practice. If sensations did not give a generally correct knowledge man would not be able in practice to utilise the objects of the surrounding world. In which case those substances, which his senses tell him are beneficial to the human organism, could turn out to be harmful for him, and vice-versa.

Our eye, for example, takes a sort of photograph of the object at which we look. If it moves, then a moving image will appear on the retina of the eye. If the object is at rest then a motionless image will appear. In this case the eyes reflect, copy what occurs in the world. That is how all the sense-organs operate. Therefore the assertion of the agnostics that the sense-organs are not reliable witnesses is incorrect.

How does it happen then that every now and again, the senses deceive us. Here is the explanation. If man were to perceive the world through the help of the sense-organs he certainly would know only the outward aspect of the objects concerned, which sometimes is misleading. On the basis of the sense-organs concerned we think that the "sun rises and sets". But as is known

this is not so. On that very same basis we presume the glass of water to be "clear as tears". But in reality there are thousands of tiny living creatures—microbes—in it. We are able to check up, to collate, to consider the evidence of the sense-organs with the help of the mind. With the help of the mind man goes further than sensations, which means that, utilising their evidence, human reason penetrates those spheres where sensations cannot.

What role does thinking play in the cognition of the world?

Here is an example. A pilot, flying above different regions of the country, noticed that in one region the magnetic needle of the compass behaved strangely. Every time that the airplane found itself above this region the magnetic needle at once bent away from the North-South direction.

On the basis of these facts scientists arrived at the conclusion that in the womb of the region in question there are large deposits of iron ores. They distort the indications of the magnetic needle. Geological prospecting has established this. That is how the iron ore deposits were discovered.

Without these facts, obtained on the basis of the evidence of the sense-organs, nobody would have guessed that there were deposits hidden in this region. However, even if the conclusion was deduced from the evidence of the senses, the whole of it was not done by the senses themselves. The senses can perceive what is directly visible, heard,

etc. But the scientists did not see the iron ore. It was the strange "behaviour" of the needle (that is an external phenomenon), that guided them to the iron ore hidden deep under the earth.

Human reason was necessary in order to make deductions following from the facts. Thus deductions as to the essence, internal relations, are made with the help of the human mind. Thought reflects the outside world apperceptively, i.e., through sensations which directly connect man with existing things. Which means that deductions are made on the basis of indirect data. To find out, let us say, whether man can fly in a cosmic capsule without risking his life, experiments were first made on animals. Dogs were placed in the capsule, and sent into orbit with rockets. From the data obtained the scientists drew conclusions on the safe flight of man in the cosmos. The exploits of the first astronauts fully confirmed this.

Without observed facts there cannot be conclusions. Facts are the life of science. They are sensations obtained through the sense-organs.

How then are conclusions derived from facts?

Conclusions are drawn due to the ability of the *mind* to generalise. Using this faculty, the mind gathers the main facts, the essential manifestations, into one whole abstraction, creates a concept, a general idea, an image, and draws conclusions which have general significance for a class of phenomena as a whole.

The senses provide the mind with certain data and facts. On the basis of these the mind draws conclusions, generalisations—this is the rational stage of the acquisition of knowledge. Without the senses the brain, the mind, cannot work. And there is no sense knowledge without the regulating work of the brain. *Thus sensory and rational knowledge make up two inseparably united stages of the process of acquiring knowledge on the basis of practice.* It is impossible to separate one from the other. But such attempts in the history of philosophy are not at all unknown. Some philosophers have declared that man comes to know the world solely through reason, that is why they are called *rationalists*. Others have maintained the contrary, that the world is to be known only through the senses, that is why they are called *sensationalists* (from the Latin word "sensus").

The limitations of the rationalists consist in that they reject the data provided by the senses, data obtained through individual experience. In reality reason produces new knowledge only when it is enriched by individual experience, by impressions obtained from sensory knowledge of things and phenomena acquired in practice.

But those also are mistaken who, as sensualists, assert that only personal experience (direct perception of reality through the sense-organs) is able to give us knowledge of the outside world.

We see, therefore, that it is impossible to exaggerate the role of one level of knowledge, rejecting the other. Sensory and rational knowledge are



equally important in the process of acquiring knowledge and one simply cannot exist without the other. From this ensues an important conclusion as to the unity of theory and practice.

### The Role of Practice in Cognition

Sensory and rational knowledge are produced in the course of practice. If people did not do anything, then not only could they have no knowledge, but they also could not exist, could not live. Having differentiated themselves from the animal world, people did not possess any theoretical knowledge of the development of nature, but they already toiled. They procured food, built dwellings, learned to make clothes. In everyday practice men learned everything that was indispensable in the struggle against nature.

This is confirmed by our everyday experience. Man is born without any knowledge. He acquires knowledge as a result of coming in contact with surrounding phenomena, in the course of practice. When a child draws near to the fire, in order to get it, he does not yet know the properties of the fire. However, soon, in getting to know these properties in practice, he will not try again to approach the fire. He acquires definite knowledge.

This does not mean, of course, that it is only in man's personal practical experience that knowledge is obtained. In our activity we obtain not only our own experience, but also the experience of other people, i.e., the social

experience of all humanity. *Social practice* is the activity of all men, in the course of which they act upon the material world and change it. Included in such practice are productive activity, the class struggle, the national liberation movement, socialist construction, scientific experiments, etc. In the last analysis *all knowledge is acquired from the social practice of men*. This is clearly seen in the history of science.

How did geometry, for example, come into being? In olden times men, in cultivating the soil and building dwellings, often encountered the demand to measure plots of land of different sizes and shapes. Gradually they found out a common method of measurement which would work with any plot, whatever its particular form: triangular, trapezoidal, etc. That is how any science comes into being—in the course of the generalisation of practice.

Thus, *scientific knowledge and theory arise from practice, which is the basis of cognition*.

*Practice is not only the basis of knowledge; it is also its motive force*. If, let us say, life presents the task of finding a better method of cultivating the soil, then this provides a great practical stimulus in the development of agronomical science.

Lenin taught that the outlook of life, of practice, should be the main and basic outlook of the theory of knowledge.

However, does not this depreciate the significance of theory and science in production and revolutionary activity? The revisionists—the

enemies of Marxism—try to prove that Marxists-Leninists, speaking of the primacy of practice in knowledge, negate the role of theory. They accuse the Marxists of "narrow practicalism", i.e., of "disregarding" theory. This is pure invention. All Marxist-Leninist Parties have attached and do attach exceptional significance to theory. Lenin taught that theory illuminates the path of practice.

Hence the recognition of the significance of practice "only", or of theory "only" is alien to dialectical materialism.

There exists a dialectical unity between theory and practice. It is impossible to divorce one from the other. Theory springs from practice. But at the same time it promotes and enriches it. Without practice there can be no theory. But without a revolutionary theory there cannot be revolutionary practice. Theory is dead without practice. Without practice theoretical principles lie as dead weights. But practice is blind without scientific theory, it lacks perspective. Without scientific theory it is impossible to lead any enterprise, or co-operative, or the country as a whole skilfully and effectively.

It follows from this example that the theoretical competence of a specialist cannot be of full value if his study proceeds in isolation from practice, from productive activity. Only when a future specialist takes pains to gain definite experience and skill in production can his theoretical knowledge have a durable foundation. And this is proven in life.

*Thus, the inseparable unity of theory and practice is the most important conclusion from the Marxist theory of knowledge. Page by page the book of nature is being read and understood by man.*

The other side of the Moon, for example, remained for many centuries unknown. The Soviet people created an automatic interplanetary station which observed the Moon, took photos of its other side which is invisible from our planet. This achievement of science is one more practical refutation of agnosticism. Now who can believe the agnostic that knowledge has some "limits", when man has broken into the cosmos and considerably widened the limits of his knowledge of the Universe?

In his cognition of nature man overcomes one obstacle after another. Profoundly connected with this are the bright optimism of Marxist-Leninist philosophy, its life-asserting character, and its profound belief in human reason.

It follows from all of this that *human knowledge develops from lack of knowledge to knowledge, from partial to ever fuller knowledge.*

Acquiring knowledge of the world, we find out the truth, and obtain the true knowledge.

**What Is Truth!**

It is obvious to us from everyday life that by truth we mean that kind of knowledge which is not invented, but which corresponds with

what exists in life itself. Truth is truth. It stands in opposition to delusion, to untruth. Our statements are false if that which we assert does not exist in reality, in real life. The materialist conception of truth is based on this.

Thus, insofar as human knowledge is true when it corresponds to reality, then it does not depend upon man's will, upon his desires. The important principle of the *objective* nature of *truth* is connected with this. It was put forward for the first time and solved by Marxist-Leninist philosophy.

In the work *Materialism and Empirio-Criticism*, V. I. Lenin calls *objective truth that part of the content of human ideas which does not depend upon the subject, does not depend upon man and mankind*.

How may we understand this properly? Perhaps truth is nature itself, inasmuch as it exists objectively, i.e., independent of man and mankind? No, it would be wrong to understand truth in such a way. That which exists can neither be true nor false. It simply exists. True or false may be the knowledge of men, their opinions, statements relating to reality, and not the reality itself.

Another problem may arise here. If truth is man's knowledge, then why do we affirm that it does not depend upon man and mankind? Is it not man's labour, and scientific investigations which achieve this or that level of scientific knowledge? Some people in fact reason in such a way. Since

there is no truth without man, they argue, then there is no objective truth, that it is invariably subjective, dependent upon man. But such reasoning is incorrect.

Without man there is, indeed, no truth. However that which makes up its content does not depend upon man. The truth of men's statements, etc., does not depend on their will, but on the extent of their correspondence with the objective reality that exists in the world independent of man. That is why Lenin says that objective truth does not depend upon man and mankind; in other words, it does not depend upon man's will. Man does not create truth, but he reflects it in conformity to that which exists in objective reality.

From this it follows that in our practical activity, in everyday life it is important to depend upon only those statements, or judgements, which correspond to reality. But what guarantee can men have that their knowledge of truth corresponds to their knowledge of reality? In other words, where is the *criterion*, i.e., the measure of the truth of our knowledge?

Some bourgeois philosophers maintain that the assertion is true when it has purpose, when it is useful to man. This philosophy is called *pragmatism* (from the Greek word "pragma"—which means "deed", "action"). The categories of truth mentioned are not objective, but subjective. You see even false, absurd theories or ideas can sometimes render themselves useful to this or that



man, or even to a class as a whole. For example, it is obvious that the imperialists' claim about the "civilising mission" of colonisers is an absurdity. It is useful to exploiters for oppressing the labouring people, but it is false.

But is a true theory useless? Is it that mathematical, physical theories do not render service to our aims? There is no doubt that they are useful to men. However these theories are true not because they are useful. On the contrary, they are useful to men precisely because they are true, because they correctly reflect the reality of the world.

Other philosophers remark: truth is that which is agreed upon by the people, or by the majority. This is precisely what they consider to be the criterion of truth. But this criterion is subjective. There is not much difference if we put truth in dependence upon individual wishes or upon the majority of the people. There are cases when not only some, but even many people, are mistaken.

Where then is that criterion of truth which does not depend upon the wishes and opinions of people, which is objective? *Social practice* is such a criterion. Men's practical activity is the only correct means of checking the truth or falsity of their opinions, theories, or statements. Marx wrote that man should prove in practice the truth and the power of his thought.

Our knowledge is true, authentic and of it there cannot be any doubt, if it is produced as a result

of the investigation of reality, and is confirmed in practice. The flight of Soviet rockets to the Moon was calculated with accuracy to the last second. And when the rocket landed at a place designated beforehand and at the exact time fixed, this was a practical confirmation of the truth of the theories of the Soviet scientists. And, on the contrary, it is a false theory which cannot stand the test of life, of practice. For instance, the assumption of the eternity of capitalism did not withstand the test of life, of practical experience. The practice of many people cast away this theory as false.

Why then do we check the truth of our knowledge by practice? To make this clear, one must bear in mind the following.

We do not seek to know reality for the sake of idle curiosity. An idea invented is of scientific value when it can be applied in practice. But can all ideas be realised in life? No. Only the true, correct idea can be realised. False ideas cannot be put into application, because they do not correspond to reality. That is why we check up the truth of our knowledge with practice.

Consequently, that which is confirmed in practice and, on the strength of this, can be practically realised, corresponds to reality.

For example, in estimating our productive, scientific, economic, and political activities, we should be guided by the criterion: what are their practical results. In such circumstances life is the supreme judge. If our calculations, suppositions,

hypotheses are disproved by life, we should have the courage to reject them and, deepening our knowledge, bring them into correspondence with experience, with practice. It is when we persist, when we will not reckon with real facts, that we end up in a trap.

Even for knowing the value of this or that statement, or promise, practice as a criterion of truth is invariably used by the people. The best test is practice.

Thus, we have elucidated that *practice is the criterion of truth, the source and object of knowledge.*

It is now necessary to elucidate the problem of how we come to know objective truth: all at once or part by part?

Science in general cannot "finish" the process of obtaining knowledge. The history of science bears witness to the fact that any scientific truth is discovered not immediately, but gradually, step by step. How is this to be explained?

Every man studies nature with the aid of all the means placed at his disposal by society.

There was a time when science did not even have simple balances and thermometers, not to speak of the microscope, telescope, etc. This, of course, limited the possibilities of knowing the world. Now science is equipped with complicated instruments. But can it be doubted that in the future instruments will be even more perfect and people will know considerably more about nature than they do now?

But if there is no full and complete knowledge, if it is all relative, then does *absolute truth*, i.e., truth that is perfect, full, and comprehensive, exist?

Some philosophers answer this question thus: there is no absolute truth. There is only *relative truth*. Everything in our knowledge is transient, fleeting, nothing is permanent, these philosophers declare. That is why they are called *relativists* (from the Latin word "relatio", which means "relative").

Other philosophers reason differently. Truth which becomes obsolete and inexact, and needs additional studies, is not, they say, truth in general. We, they say, are only concerned with absolute, perfect truths. Philosophers who reason that way are dogmatic: for them truths are dogmas, i.e., eternal and immutable theses, true once and for ever.

They declare: it is impossible to doubt that two times two will always be four, that the sum of all the angles of a triangle will always be equal to two right angles, that Paris is situated in France. These are eternal, final truths in the last analysis, i.e., absolute truths.

Do such truths exist?

Yes, such truths certainly exist. They are present, for example, in such sciences as mathematics, astronomy, mechanics. Here in fact such truths as two times two is four can be found. But you see in these so-called exact sciences not all principles are as eternal as the dogmatists



think. Hundreds of hypotheses in astronomy, physics and chemistry have been disproved in the course of the development of science.

Again, are there no eternal scientific truths, i.e., truths which can never be disproved in the future? Dialectical materialism recognises the existence of such truths, but in order to understand this, we must first remember that, as Lenin pointed out, *truth is a process*. Truth cannot be represented as a final and comprehensive image or photo of the whole of nature. The process of comprehension of absolute truth is not an instantaneous act, but a complicated historical and endless path of acquiring knowledge. Mankind can never finish or complete it.

*The process of comprehending absolute truths goes through stages of accumulating relative truths.* The development of knowledge consists in that these relative truths accumulate gradually, bringing man closer to the knowledge of all nature, its phenomena and laws. Just as the whole is formed by its parts, absolute truth is stored up from relative truths in the endless process of the development of knowledge.

Such an understanding of absolute truth—as the sum of relative truths in the process of their development—is directed against metaphysical separation of relative and absolute truths from each other. There is no impassable barrier between relative and absolute truth. As we cognise relative truths, together with them we obtain valuable fragments of absolute truth.

Take the following example. More than two thousand years ago there existed a conjecture that all bodies are made up of tiny indivisible particles—atoms. Now science has proved that bodies are, indeed, made up of atoms, but the atoms themselves are divisible. This means that the ancient conjecture was a relative truth. But it did contain within itself the grains of absolute truth. Matter consists indeed of atoms, but they are made up of still tinier particles. But this does not mean that science in this problem has already exhausted its possibilities. The structure of the atom will be studied more and more profoundly, and, consequently, the atomic theory also will inevitably be developed. We see from this that any relative truth contains grains of absolute truth.

It appears that we come to know absolute truth not at once, but gradually, by way of knowing relative truths. The sum of relative truths in their development gives us full, profound, absolute knowledge of nature as a whole, and about this or that aspect of objective reality.

Dialectical materialism teaches that *truth is always concrete*.

*Concrete truth is that truth which correctly reflects the essence of specific phenomena and those conditions in which they develop.* In opposition to this, truth in abstraction does not take into account the concrete situation, the conditions, through which phenomena develop. That is the way with the dogmatists. For example, it is impossible to answer abstractly the question: "What



must be the method of struggle for peace and democracy?" The correct answer to such a question can be found only when the concrete conditions are pointed out under which this struggle develops. It is necessary to study the conditions in those countries which have already freed themselves from capitalist oppression, as distinguished from the conditions of those countries still fighting for their liberation, etc.

*Thus creative Marxism demands every time that we study the concrete conditions, the historical stage, in which our activity proceeds. Herein lies the essence of the concrete-historical approach to the phenomena of reality.*

Such are the requirements of the theory of knowledge of dialectical materialism.

## CONCLUSION

In the epoch of contemporary history, when the transition from capitalism to socialism is being realised, the attraction of the peoples of the world to the Marxist-Leninist doctrine has grown tremendously. The Marxist-Leninist world outlook captures ever more powerfully the thoughts and aspirations of progressive mankind.

The dissemination of the philosophy of Marxism-Leninism proceeds today in sharp struggle with contemporary bourgeois philosophies.

Marxist-Leninist philosophy proves the inevitability of the collapse of imperialism, the decaying old regime, and affirms the victory on earth of the new social system. For this reason all schools and trends of contemporary bourgeois philosophy come out in a united front in the defence of the old order and lead the war against the new progressive ideas.

By its very essence Marxist philosophy proceeds from life, from reality and practice. It is the tested compass, the guide in everyday life and activity.

Many peoples of the world are building socialist society, that requires creative and truly inspiring labour. Along their path there are not

only great victories, but also difficulties accompanying everyday progress. A profound, concrete knowledge, which contemporary science affords, is necessary for successful work in these conditions. But for the creation of the magnificent edifice of socialism this is not enough. Great deeds and accomplishments call for rallying the great energies of the people. Without a profound conviction of the righteousness of the great ideals of socialism there cannot be the great deeds that are performed in the process of socialist construction. And this inner conviction, the readiness to give all one's strength for the well-being of the people, for socialism, is inspired by the Marxist-Leninist philosophy-dialectical materialism.

Dialectical materialism—the scientific world outlook—instils an unshakeable faith in the inevitability of the triumph of socialism all over the world. And this faith is not blind, not passive. This conviction arises from a profound knowledge of the general laws of social development, disclosed by Marxism-Leninism. By the action of the inexorable laws of history there has arisen today a new life for the peoples of the socialist countries in the place of moribund capitalism, and a new life is beginning to be built in the countries recently liberated from the political, economic and ideological domination of imperialism.

#### REQUEST TO READERS

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OF DIALECTICAL  
MATERIALISM**

**Popular Outline**

